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American Public Health Association

Prepared for

Environmental Protection Agency, Washington, D C Office of Toxic Substances

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16. ABSTRACT

This report presents estimates of the population residing within five miles of plants currently producing or processing vinylidene chloride and the methodology used for estimation.

It is estimated that 3.6 million persons reside within five miles of the 38 plants that have been identified. These estimates are presented by age, sex, direction and distance from the plant for each of the 38 plants individually.

For the plants located in Standard Metropolitan Statistical Areas that have been divided into "census tracts", census tracts and the population was estimated from Bureau of the Census publications giving the 1970 population for census tracts. For plants located in untracted areas, the estimates were made using Bureau of the Census maps of county subdivisions and publications giving the 1970 population for county subdivisions.

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ESTIMATION OF POPULATION RESIDING NEAR VINYLIDENE CHLORIDE PLANTS

August 1976

FINAL REPORT

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EPIDEMIOLOGY STUDIES

TASK IV - VINYLIDENE CHLORIDE

by

Emanuel Landau
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NOTICE

This report has been reviewed by the Office of Toxic Substances, Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency. Mention of trade names or commercial products is for purposes of clarity only and does not constitute endorsement or recommendation for use.

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I. SUMMARY

The Population

In 1970 an estimated 3.6 million persons were living within five miles of plants currently producing or processing vinylidene chloride. The estimated number of persons living at various distances from the plants are as follows:

Distance (miles)	Estimated number of persons
0-¼	48,739
¼-1	136,100
1-3	1,304,316
3-5	2,084,240
Total	3,573,395

If the 38 plants on which this report is based are classified according to the process stage in which vinylidene chloride is involved, the estimated population around these plants is as follows:

Process	Estimated number of persons
Monomer synthesis	88,936
Polymer synthesis	604,718
Fabrication	2,879,741
Total	3,573,395

This report is based primarily on the plants engaged in producing or processing vinylidene chloride (VDC) as listed in the April 1976 report (1) of Arthur D. Little, Inc. which was produced under contract for the Environmental Protection Agency, Control Systems Laboratory, Durham, North Carolina. However, the original list of 40 plants was revised to 38 plants to reflect deletions due to discontinuation of production or processing of vinylidene chloride as well as the addition of new or omitted facilities. The geographic distribution of these plants is shown in Figure 1.

Methodology

The population in this report is underestimated slightly because we have undoubtedly missed some of the minor plants in the industry. However, every effort was made to include all the major plants and all the minor plants that we could identify.

The procedures selected for making the population estimates for this report were defined objectively. When a choice of procedures existed, preference was given to those methods that include a minimum of subjective judgment and which can be applied uniformly in all situations. It is felt that anyone who follows the procedures used in this report will arrive at approximately the same results.

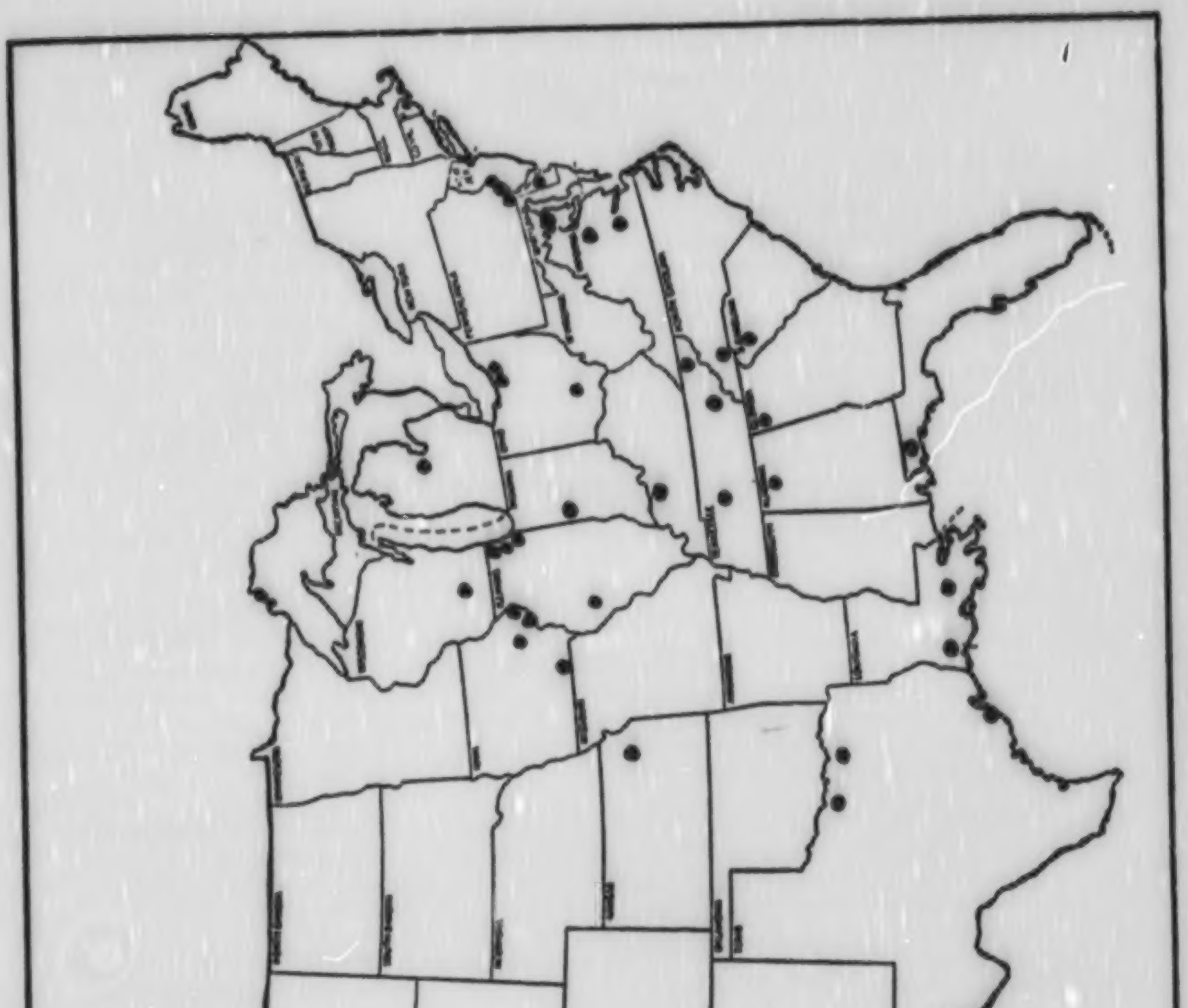

Figure 1. Geographic Distribution of Plants That Process Vinylidene Chloride

II. SOURCE OF PLANTS SURVEYED

The Plants

The April 1976 report (1) of Arthur D. Little, Inc. produced under contract for the Environmental Protection Agency, Control Systems Laboratory, Durham, North Carolina, identifies the major plants in the vinylidene chloride monomer, polymer and polymer processing industries. Tables 1, 3, 6, 9, 13, and 17 in that report list plants that produce or use vinylidene chloride in various processes. These six tables are reproduced in Appendix I of this report. The 40 plants listed in these six tables form the base, with appropriate deletions and additions, for the 38 plants used in this report. It is these 38 plants, in 37 different locations, that we refer to in the tables and discussion about the population residing near all plants producing or processing vinylidene chloride.

Verification of Plants

Appendix II lists all the 38 plants included in the present report, giving the address for each one. Each address is that of the plant itself and not the front office. Unfortunately, in many cases, especially in the less populous areas, the address is not sufficiently descriptive to be of any significant help in locating the plant.

Each of the 40 plants listed in Appendix I was telephoned to check whether it is still in operation and producing or processing vinylidene chloride as indicated in these tables. Four plants that gave negative replies are not included in Appendix II. During these calls, the plants were asked if they knew of other plants that might be possibilities for inclusion. Two additional plants for which this information was confirmed to be correct are included in Appendix II.

Categories of Plants

In the Arthur D. Little report (1), it is estimated that "VDC emissions in the synthesis of the VDC monomer and in the synthesis of its polymers and their fabrication (coating and extrusion), totaled about four million pounds in 1974". An extimated 82.6 percent of these emissions resulted from the monomer synthesis, 16.7 percent from the polymer synthesis, and 0.7 percent from the fabrication and compounding processes.

The 38 plants included in this report can be categorized according to these three processes as follows:

		No. of Plants
1.	Synthesis of vinylidene chloride monomer....	3
2.	Synthesis of vinylidene chloride polymers...	16
3.	Fabrication using vinylidene chloride polymers................................	19
	Total	38

For each of the categories of plants, the A.D. Little report (1) contains a brief summary on the structure of the industry. These summaries are reproduced in Appendix III.

III. SOURCE OF POPULATION DATA

Location of Plants in Tracted Areas

The more densely populated areas of the country have been divided into "Census Tracts" by the Bureau of the Census. The census tracts have been formed so as to contain an average of 4,000 inhabitants each. Therefore, the tracts tend to be geographically smaller in the center of large cities and larger as one moves away from the center of the city.

The Bureau of the Census has published a report for each Standard Metropolitan Statistical Area that has been divided into census tracts. This series of publications, entitled "Census Tracts-Series PHC-1" (2), contain a variety of information by census tracts, including the population by age and sex. The population data from a sample page of this report are shown in Appendix IV.

Each of these reports also contains a map of the entire Standard Metropolitan Statistical Area showing the outline and identification number for each census tract. We used these publications to determine the population by age and sex residing within each of the following four zones around each individual plant: 0-1/2, 1/2-1, 1-3 and 3-5 miles.

The Bureau of the Census has also published a list of key persons who can be contacted for information concerning each of the tracted metropolitan areas. The name, title, office and address of the person for each of the tracted areas is in "Appendix C-List of Census Tract Key Persons" of the Bureau of Census Publication entitled, "Census Tract Manual" (3). The key person is most often the director of the city or county planning agency.

Location of Plants in Untracted Areas

For the less densely populated areas of the country, that have not been divided into census tracts, we used county subdivisions, which are political or administrative subdivisions of counties or subdivisions created by the Bureau of the Census and for which there are published data on population.

For each State, the Bureau of the Census has presented the population of the county subdivisions in their publication, "Number of Inhabitants-Series PC-1A (4). Each volume includes a map of the county subdivisions for that State, together with their designations. We used these publications to determine the population within a five mile radius of each plant.

For each plant that was located in an untracted area, its location was plotted on the appropriate map of county subdivisions. To locate the plant, a telephone call to the town where each plant was located, or the nearest town to it, would yield the distance and direction of the plant from the nearest town. In each case, the plant location was not used until it was independently obtained from two sources. The best sources for such information were:

1. The Chamber of Commerce
2. The public library
3. The plant itself

IV. ESTIMATE METHODOLOGY

Population Estimates for Tracted Areas

For each plant that was situated in a tracted area, the Census Tract key person was telephoned to obtain the identification number of the census tract in which the plant was located and the location of the plant within the census tract. For greater accuracy, we also asked in each case that the plant be plotted on a census tract map and that a portion of the may be photocopied and mailed to us. In a few cases, this request was refused or the map was never received.

With this information, we plotted the location of the plant on the census tract map published by the Bureau of the Census in their "Census Tracts-Series PHC-1" reports (2).

After a plant was located on the census tract map, we then defined the four zones by drawing four concentric circles around the plant with radii of 1/2, 1, 3 and 5 miles. We then listed the identification numbers of the census tracts that were within 0-1/2, 1/2-1, 1-3 and 3-5 miles of the plant. A census tract was listed only once, in the zone which contained the greatest portion of its area. If most of the area lay outside the 5 mile circle, a census tract was not inclued at all. Using the census tract identification number, the population, by age and sex, was then obtained for each Census Tract from the "Census Tracts" report and totaled for each zone. These rules carry the implicit assumption that the population is evenly distributed within the area of a census tract. We assume that the errors caused by this procedure will even out in the total population for all plants, but not necessarily for each individual plant, and especially not for the individual plants in the less densely populated areas.

An exception to the above rule was made for census tracts that had any part of their area within 1/2 mile of the plant because there was less opportunity for errors to balance out due to the small number of census tracts involved. These census tracts were listed in each zone in which any portion of their area lay and the percent of their area in each zone was recorded to the nearest 10%. The population of each of these census tract was then multiplied by these percents to obtain the population estimate for each zone. This rule also contains the implicit assumption of an even distribution of the population within the census tract.

In a very few instances, a census tract has been split by the Bureau of the Census to reflect political boundaries and the population data for it is presented separately for each part and also together for the total of the two parts. In all such cases, we treated it as a whole census tract and ignored the split.

The age groups in the Census Bureau publications are more detailed than used in this report so that age groups were added together to obtain the data of this report. The reverse was true in one case. The Bureau of the Census population data is available for the age group "under 5" and for the age group 3-4. To obtain the population estimates for the age group "under 1", we subtracted the latter from the former and divided by 3. The population estimate for the age group 1-4 was then obtained by subtracting that for "under 1" from that for "under 5".

Appendix V. shows the mapping procedures for an example of a tracted area.

Population Estimates for Untracted Areas

After a plant was plotted on the appropriate map of county subdivisions, we drew a circle around it with a five-mile radius. Then we recorded the name and percentage of each county subdivision that lay partly or wholly within this circle. This again assumes an even geographic distribution of the population which results in a random error in the estimates which can be expected to even out in the total of all plants.

We estimate these percentages rather than use the "all or none" rule that we used for census tracts because the county subdivisions are usually much larger areas than the census tracts. This was an effort to reduce the amount of random error that results from these estimation procedures. Nevertheless, the random error in the population estimates is undoubtedly larger for the untracted areas than it is for the tracted areas. However, random errors tend to average out for the total of all plants, and, more importantly, the population in the untracted areas is much smaller than in the tracted areas and therefore the errors for these areas have a much smaller influence on the total.

Since we took a portion of the total population for many of the county subdivisions, it was necessary to estimate an age-sex distribution for each of these portions. There were two choices of data on which to base these estimates. One choice was to use the population by age and sex for the county subdivisions which is unpublished but can be obtained from the Bureau of the Census. The other choice was to use the population by age and sex for counties which is published by the Bureau of the Census in "General Population Characteristics-Series PC-1B" (5). There is one such publication for each state. We chose the second method because it could be done faster. A typical page from this publication is reproduced in Appendix VI. The population for the desired age-sex groups in the whole county was obtained by addition of the more detailed age groups in the table. These populations were then converted to percents and these percents were applied to our estimate of the population in the 5-mile zone in each county.

The maps of county subdivisions do not show enough detail to try to estimate the population in each of the zones within the 5 mile circle around each plant. Therefore, the population for the 0-1/2, 1/2-1, 1-3 and 3-5 mile zones around the plant were estimated by multiplying the final estimate for each age-sex group by .011, .044, .346 and .599 respectively which are the ratios of the population estimates for the first group of plants in the tracted areas that were completed. These are very close to .010, .030, .320 and .640 which are the ratios of the areas defined by four concentric circles with radii of 1/2, 1, 3 and 5 miles.

Direction from plant

In the tracted areas, the area in the five mile circle around each plant was divided into the 16 compass directions by drawing a set of lines, all running through the location of the plant and 22-1/2 degrees apart, so as to determine the boundaries of the 16 compass directions. For each census tract, we estimated the percent of its area to the nearest 10% that lay in each of the directions. Then, by multiplying these percents by the total population in each census tract, we got an estimate of the population in each direction for each census tract. We then summed up the estimated population in each of the directions of all the census tracts in an entire zone to get the total estimated population for that direction in that zone. This procedure also assumes an even distribution of the population geographically.

In the cases where only a certain percentage of a census tract was taken to lie in a given zone, the estimates of percents for each of the directions were taken from only that portion of the tract that lay in that zone. In the cases where the entire census tract was taken to lie in one zone even though part of it lay in other zones, the percent for each direction were taken for the entire census tract.

In the untracted areas, the area in the five mile circle around each plant was divided into 16 compass directions the same as for the plants in the tracted areas. For each county subdivision, or part of one, that lay within the five mile circle, we estimated the percent of area, to the nearest 10%, that lay in each of the directions. Then, by multiplying the percents by the estimated population within the 5-mile circle we obtained the estimated population in each direction for each whole or partial county subdivision. We then summed up the estimated population in each of the directions for all county subdivisions to get the total estimated population for each direction.

The population for the 0-1/2, 1/2-1, 1-3 and 3-5 mile zones around the plant were estimated by multiplying the final estimate for each direction by .011, .044, .346 and .599 respectively.

V. RESULTS

Population by age, sex, direction, and distance from plant

Table 1 presents the estimated population by age, sex and distance from the plant for the total of all 38 plants included in this report. The estimated population by age, sex, and distance from each plant separately is presented in Appendix VII. Appendix VIII presents the estimated population by direction and distance from each plant separately.

Population by process stage

Of the 38 plants, 3 are engaged in the monomer synthesis process, 16 in polymer synthesis and 19 in fabrication. The population estimates for each of these processes separately are presented in Tables 2, 3, and 4.

Population in Tracted and Untracted Areas

Of the total population of 3.6 million, 3.3 million, or 92% reside in Standard Metropolitan Statistical Areas that have been divided into census tracts. The remaining 0.3 million or 8% reside in the less populous untracted areas. Appendix IX shows the population estimates for the 24 locations in untracted areas. Appendix X shows the population estimates for the 13 locations in untracted areas.

Population by State

The total population of 3.6 million is shown by state in Appendix XI.

Population by Company

The total population of 3.6 million is shown by company in Appendix XII.

Cumulative Population

Appendix XIII presents the cumulative population by plant. It is seen that 58% of the population resides near four plants.

TABLE 1.

Estimated Population Residing Near Plants Producing or Processing Vinylidene Chloride, by Age, Sex and Distance from Plant

Zone (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
0 – ½	48,739	393	385	1,543	1,519	3,987	3,953	10,484	12,030	4,599	5,073	1,959	2,814
½ – 1	136,100	1,155	1,133	4,629	4,507	12,915	12,705	28,406	30,497	12,385	14,347	5,382	8,039
1 – 3	1,304,316	12,226	11,891	47,700	46,059	122,484	119,370	259,100	275,505	129,519	145,680	55,585	79,197
3 – 5	2,084,240	19,289	18,713	76,669	74,274	203,666	197,914	432,547	445,044	200,062	217,815	81,578	116,669
TOTAL	3,573,395	33,063	32,122	130,541	126,359	343,052	333,942	730,537	763,076	346,565	382,915	144,504	206,719

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

TABLE 2.

Estimated Population Residing Near Plants Engaged in the Synthesis of Vinylidene Chloride Monomer, by Age, Sex and Distance from Plant

Zone (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
0 – ½	315	3	3	14	13	37	37	59	66	29	28	10	16
½ – 1	1,035	11	11	44	43	126	123	191	215	91	92	35	53
1 – 3	17,356	161	164	665	681	2,103	2,101	3,439	3,697	1,594	1,604	480	667
3 – 5	70,230	676	630	2,627	2,475	7,504	7,118	14,159	15,294	6,845	7,311	2,270	3,321
TOTAL	88,936	851	808	3,350	3,212	9,770	9,379	17,848	19,272	8,559	9,035	2,795	4,057

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

TABLE 3.

Estimated Population Residing Near Plants Engaged in the Synthesis of Vinylidene Chloride Polymers, by Age, Sex and Distance from Plant

Zone (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
0 – ½	11,114	99	92	390	370	1,030	1,017	2,471	2,555	953	1,132	373	632
½ – 1	34,091	302	290	1,162	1,125	3,176	3,022	7,955	7,587	3,045	3,483	1,170	1,774
1 – 3	221,966	1,978	1,957	7,692	7,569	22,802	22,049	46,401	49,305	20,229	22,735	7,565	11,684
3 – 5	337,547	3,119	3,028	12,399	12,001	37,571	35,716	70,308	73,674	32,105	33,393	9,706	14,527
TOTAL	604,718	5,498	5,367	21,643	21,065	64,579	61,804	127,135	133,121	56,332	60,743	18,814	28,617

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

TABLE 4.

Estimated Population Residing Near Plants Engaged in Fabrication Using Vinylidene Chloride Polymers, by Age, Sex and Distance from Plant

Zone (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
0 – ½	37,310	291	290	1,139	1,136	2,920	2,889	7,954	9,409	3,617	3,913	1,576	2,166
½ – 1	100,974	842	832	3,423	3,339	9,613	9,580	20,260	22,895	9,240	10,772	4,177	6,212
1 – 3	1,064,994	10,087	9,770	39,343	37,809	97,579	95,220	209,260	222,503	107,896	121,341	47,540	66,846
3 – 5	1,676,463	15,494	15,055	61,643	59,798	158,591	155,080	348,080	356,076	161,112	177,111	69,602	98,821
TOTAL	2,879,741	26,714	25,947	105,548	102,082	268,703	262,769	585,554	610,883	281,874	313,137	122,836	174,045

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

VI. COMPARISON OF METHODOLOGY IN THIS REPORT WITH THAT FOR VINYL CHLORIDE

The procedures followed in this report were those developed for a similar report (6) published in November 1975 wherein we estimated the population residing near plants tht produce vinyl chloride or vinyl chloride resins. In this section, we shall list only the changes in methodology.

In telephoning the census tract key person, for this report, we asked only for the identification number of the census tract in which the plant was located and the location of the plant within that tract. We did not ask them to list the identification numbers of the census tracts within 0-1/2, 1/2-1, 1-3, and 3-5 miles of the plant. This had several advantages:

1. The individuals were much more cooperative when we asked for less work from them.
2. Our experience last time was that they often misunderstood our rules and sometimes did a careless job so that we had to re-do the job.
3. We could do just as good a job ourselves with maps.
4. Our rule this time was to select tracts by area alone and not use any subjective judgment about the distribution of the population within a tract. Therefore, with this rule, there was no gain in accuracy in asking them to do it.

We added an exception to the rule of allocating census tracts to zones for the tracted areas. The exception is that for all tracts that lie partly within the 0-1/2 mile zone, we designated that percent of their area which lay in each of the zones and allocated that percent of their population to each zone. For untracted areas, we also changed the rule of allocating entire county subdivisions to be in or out of the 5 mile circle around the plant. The new rule was to estimate the percent of each county subdivision that lay within the 5 mile circle and to take that percent of the population.

The above two changes in the rules means that the plants that appear in both reports, that is, this report and the 1975 vinyl chloride report(6), will show somewhat different populations. We believe that the present estimates, although not necessarily better for any individual plant, will be better for the total of all plants.

VII. RELIABILITY OF THE ESTIMATES

In arriving at the population estimates presented in this report there were some steps in the procedures where judgments had to be made. In every case, an effort was made to make the judgments on an objective basis so that any other person making the same estimates would arrive at approximately the same results.

These estimates were made using the best information currently available. The most accurate method of determining the population by distance would be a special enumeration of the population such as the Bureau of the Census conducts for governmental bodies. The resultant improvement in the estimates would not seem to justify the costs involved.

The greatest reliability in our estimates is in the population estimates for the 3-5 mile zone. The reliability of the estimates decreases with decreasing distance from the plant. This is because entire census tracts outside the 0-1/2 mile zone were assigned to one zone, and there are fewer census tracts for errors to balance out as one gets closer to the plant.

In the less densely populated areas where the Bureau of the Census county subdivisions were used because the smaller census tracts were not available, it is difficult to attribute direction to population groups with much precision. However, this is the best that can be done with the data that are readily available. To achieve greater precision, one would have to survey these areas. This would increase the precision of population estimates for individual locations but would have very little effect on national totals because these areas represent a very small percent of the total population living near such plants.

Each plant was plotted as a point on a Census Bureau map, either the map of census tracts or of the map of county subdivisions. Therefore, it was not possible to distinguish detail with respect to the area of the plant. This was, in most cases, quite adequate for estimating the population within 1/2, 1, 3, or 5 miles from a plant. However, for certain plants that cover a larger area, this method may be too crude for estimating the population within 1/2 or 1 mile from the plant. No effort was made to identify such plants.

VIII. REFERENCES

1. "Vinylidene Chloride Monomer Emissions from the Monomer, Polymer, and Polymer Processing Industries," A.D. Little, Inc., EPA Contract No. 68-02-1332, Task Order No. 13, April 1976.

2. "Census Tracts - Series PHC-1", Bureau of the Census, U.S. Department of Commerce, 1970.

3. "Census Tract Manual", Bureau of the Census, U.S. Department of Commerce, 5th Edition, 1966.

4. "Number of Inhabitants - Series PC-1A", Bureau of the Census, U.S. Department of Commerce, 1970.

5. "General Population Characteristics - Series PC-1B", Bureau of the Census, U. S. Department of Commerce, 1970.

6. "Epidemiology Studies, Task III-Vinyl Chloride, "U. S. Environmental Protection Agency, Publication No. 560/6-75-002, November 1975.

Appendix I. Plants Listed in the A.D. Little Report (1)

Appendix Table I-a. Estimated Production of Vinylidene Chloride Monomer - 1974

Manufacturer	Plant Location	Production (MM lbs)[1]
PPG Industries	Lake Charles, LA.	170 - 175
Dow Chemical U.S.A.[2]	Freeport, TX Plaquemine, LA.	90 - 95
	Total Production:	260 - 270

Source: Industry and Arthur D. Little, Inc. estimates. Reference (1), Pg. 11

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[1] About 155 MM lb of VDC are used to manufacture 1,1,1-Trichloroethane.

[2] Dow plans to expand their capacity plant during 1975.

Appendix Table I-b. Manufacturers of PVDC Latex for Barrier Coatings[1]

Manufacturer	Plant Location
Dewey and Almy Chemical, (Div. of Grace)	Owensboro, KY
Morton Chemical Co., (Div. of Morton-Norwich Products, Inc.)	Ringwood, IL
BASF-Wyandotte	S. Kearney, NJ
Staley Chemical (Div. of A.E. Staley)	Lemont, IL
Dow Chemical	Midland, MI
DuPont[2]	Circleville, OH
Olin[2]	Pisgah Forest, NC

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[1] Polymers contain about 90% VDC and at least two other monomers selected from acrylate esters, acrylic acid, acrylonitrile. One manufacturer uses vinyl chloride as the comonomer.

[2] Captive producers.

Appendix Table I-c. Manufacturers of PVDC Latex for Miscellaneous Applications

Manufacturer	Plant Location
Dow Chemical	Midland, MI
	Allans Pt., CT
	Dalton, GA
	Freeport, TX
Goodrich Chemical	Avon Lake, OH
Rohm and Haas	Knoxville, TN
	Bristol, PA
Standard Brands Chemical Industries	Cheswold, DL
	Kensington, GA
National Starch & Chemical Corp.	Meredosia, IL

Source: Industry

Appendix Table I-d

Manufacturers of Synthetic Fibers Based on PVDC

Manufacturer	Plant Location
Tennessee Eastman	Kingsport, TN
Monsanto	Decatur, AL
American Cyanamid	Pensacola, FL

Appendix Table I-e

Manufacturers of PVDC-Coated Cellophane

Manufacturer	Plant Location	Age of Plant, Years
DuPont	Richmond, VA	45
	Clinton, IA	35
	Tecumseh, KS	17
FMC	Fredericksburg, VA	45
	Marcus Hooks, PA	17
Olin	Pisgah Forest, NC	24
	Covington, IN	19

Appendix Table I-f

Major Manufacturers of Extruded PVDC Products

Manufacturer	Plant Location	Resin Type
Cryovac (Div. of W.R. Grace and Co.)	Simpsonville, SC Cedar Rapids, IA Camarillo, CA Iowa Park, TX	Emulsion and Suspension
Oscar Meyer	Madison, WI Chicago, IL Davenport, IA Philadelphia, PA Nashville, TN Vernon, CA	Emulsion and Suspension
Dow Chemical	Midland, MI	Suspension
American Can Co.	Cleveland, OH	Emulsion
Amtech, Inc.*	Odenton, MD	Suspension
Union Carbide Corp.	Centerville, IA	Suspension

Source: A.D. Little, Inc. and industry contacts.

*Manufacture monofilament

Appendix II

Plants Included in the Present Report and Their Addresses

American Can Co.
5300 Dobeckmun Street
Cleveland, OH

Amtech, Inc.
520 Telegraph Road
Odenton, MD

Cryovac Division
W.R. Grace and Co.
North Maple Street
Simpsonville, SC

Dewey & Almy Chemical Division
W.R. Grace and Co.
U.S. Route 60 East
Owensboro, KY

Dow Chemical Co.
Plaquemine, LA

Dow Chemical Co.
Freeport, TX

DuPont Co.
6000 S.E. 2nd Street
Tecumseh, KS

DuPont Co.
Jefferson Davis Highway
Richmond, VA

FMC Corp.
Post Road
Marcus Hook, PA

B.F. Goodrich Chemical Co.
Moore and Walker Road
Avon Lake, OH

Monsanto Co.
Courtland Highway West
Decatur, AL

American Cyanimid Co.
Pace, FL

Cryovac Division
W.K. Grace and Co.
1125 Wilson Avenue, S.W.
Cedar Rapids, IA

Cryovac Division
W.R. Grace and Co.
West Magnolia Street
Iowa Park, TX

Dow Chemical Co.
1468 Prosser Drive, S.E.
Dalton, GA

Dow Chemical Co.
Midland, MI

DuPont Co.
Highway 67
Clinton, IA

DuPont Co.
DuPont Road
Circleville, OH

Eastman Chemical Products, Inc.
Eastman Road
Kingsport, TN

FMC Corp.
Fredericksburg, VA

Minnesota Mining & Manufacturing Co.
State Docks Road
Decatur, AL

Morton Chemical Co.
Barnard Mill Road
Ringwood, IL

National Starch and Chemical Corp.
Meredosia, IL

Olin Corp.
Covington, IN

Olin Corp.
Pisgah Forest, NC

Oscar Meyer and Co.
3301 E. Vernon Avenue
Vernon, CA

Oscar Meyer and Company
1241 N. Sedgewick Street
Chicago, IL

Oscar Meyer and Company
1337 West 2nd Street
Davenport, IA

Oscar Meyer and Co.
3333 S. Front Street
Philadelphia, PA

Oscar Meyer and Co.
400 Cartwright Street
Goodlettsville, TN

Oscar Meyer and Co.
Highway 75 South
Sherman, TX

Oscar Meyer and Co.
910 Mayer Avenue
Madison, WI

PPG Industries, Inc.
Columbia Southern Road
Lake Charles, LA

Reichhold Polymers, Inc.
Cheswold, DE

Rohm and Haas, Inc.
Route 413
Bristol, PA

Rohm and Haas, Inc.
730 Dale Avenue
Knoxville, TN

A.E. Staley Manufacturing Co.
Old Joliet and Chicago Roads
Lemont, IL

Union Carbide Corp.
24th and O'Neal Streets
Centerville, IA

Appendix III. Structure of the Industry

1. Monomer Synthesis

"Vinylidene chloride is produced commercially in the United States by Dow Chemical and PPG Industries. Vulcan Materials was formerly a producer, but halted production on January 1, 1974, after manufacturing vinylidene chloride for about three years.

"Three plants manufacture vinylidene chloride in the U.S.A. - - - - - - Because vinylidene chloride manufacture is limited to only two producers, production statistics are not readily available. Consequently, our estimates were based on an analysis of the consumption of vinylidene chloride in various conversions, and an analysis of the consumption of chlorine in the manufacture of VDC. Although PPG Industries manufactures more vinylidene chloride than Dow Chemical, most of PPG's VDC is used captively to yield methychloroform (see Equation 1).

$$(1)\quad CH_2{=}CCl_2 + HCl \longrightarrow CH_3CCl_3$$

"PPG Industries produces about 175 million lbs. of VDC annually, and 85% to 90% is used captively to manufacture methylchoroform. The remainder is sold into the merchant market, where it is used by ploymer producers.

"Dow Chemical also uses most of its VDC production captively. We estimate Dow's total production (captive and merchant) was about 90-95 million lbs. in 1974. Dow uses VDC to produce a variety of VDC copolymers -------------- and sells about 20-25 million lbs. annually into the merchant market for polymer synthesis. PPG Industries probably also sells about 20-25 million lbs of VDC annually. Thus, the total merchant market for VDC monomer is about 40-50 million lbs. per year.

"- - - - - - - the annual production of VDC in 1974 was 260-270 million lbs. According to information provided to us by the Louisiana Air Quality Commission, Dow Chemical plans to expand their VDC capacity facility sometime during 1975."

2. Polymerization process: PVDC Latex for Barrier Coatings

"In 1974, about 20-22 million pounds of PVDC (on a dry solids basis) were produced as barrier coating latices.

Dewey and Almy Chemical (Division of Grace) dominates this market. Alone, they account for 50-60% of the merchant market. Morton Chemical Co. (Division of Morton Norwich) is No. 2 in the industry. They account for 18-20% of the merchant market. The remaining merchant production is approximately equally divided between BASF-Wyandotte, Dow Chemical, and Staley Chemical. - - - - - - Recall that Dow was also cited as a monomer producer. These producers sell primarily to members of the packaging industry who manufacture PVDC-coated film (polyethylene polyester, polypropylene and nylon) and PVDC-coated glassine, paper and paperboard.

"In addition to these merchant producers, others manufacture and use the latex captively, as exemplified by DuPont and Olin. DuPont uses its latex to coat polyester (Mylar) film (they make several copolymer products), and Olin uses its latex to coat polyethylene, glassine, and other plastic films. These captive operations are small. In 1974, about 1-1.5 million pounds (dry basis) of PVDC barrier-coating latex was produced captively.

"Because the market for PVDC barrier-coating latex has shown little growth during the past several years, most of the producers have idle capacity. The plants vary in age, some are 20 years old, but most are about 10 years old. Dewey and Almy had manufactured PVDC latex in two locations--Acton, Mass. and Owensboro, Ky.; but the Acton plant, which was the older one, was closed three years ago. The Owensboro plant was expanded four years ago."

3. Polymerization process: PVDC Latex for Miscellaneous Applications

"Because some manufacturers may use very small amounts of VDC in a particular copolymer, any list of manufacturers who use VDC in this miscellaneous category could be incomplete. A number of companies have used VDC in the past but are currently non-users, e.g., Borden Chemical. Borden was a consumer of VDC about six years ago. Both Glidden-Durkee (Division of SCM Corporation) and GAF Corporation have considered the use of VDC in their copolymers but, at this time, they do not use this monomer.

"We have estimated that in 1974 about 15 million lbs. of VDC were used to manufacture latices for miscellaneous applications other than barrier coatings. We believe that Dow Chemical is the major manufacturer in this category. They could account for about 50% of this market. Standard Brands is another major user, and Goodrich Chemical, Rohm and Haas, and National Starch are minor VDC consumers. - - - - - -

"In 1974, Dow Chemical introduced three new latices, specifically for the carpet-backing market. They were designed for double jute lamination of tufted carpets. These latices contain at least 50% polymerized VDC and some contain more. The comonmers are butadiene and styrene. The latices have about 47-48% solids. These products are manufactured in four locations.

"Standard Brands makes a similar line of products. Standard Brands also manufactures latices containing PVDC for coating paper and textiles, and they sell a PVDC Latex for adhesive applications.

"Goodrich Chemical manufactures three types of PVDC latices. The comonomers are vinyl chloride and acrylates. One polymer series contains about 25% polymerized VDC and others contain 60% and 80% polymerized VDC. These latices have a solids content of about 45-50% and are used as flame-resistant coatings.

"Rohm and Haas makes products that are similar to those manufactured by Goodrich, but Rohm and Haas does not use vinyl chloride as the comonomer. In the past, Rohm and Haas manufactured only two types of PVDC polymers. One contains about 50% polymerized VDC and is used as a back coating for fabrics in automotive applications, and the other contains more than 50% polymerized VDC and is used primarily as a flame-resistant binder. Early in 1975, Rohm and Haas introduced a new latex, which contains more than 50% polymerized VDC. It is being sold for spray applications for non-wovens and fibers. These products have a solids content of about 45%.

"National Starch makes two latices that contain VDC. The comonomers are vinyl acetate and various acrylates. One latex contains 50% polymerized VDC and another 70% polymerized VDC. This manufacturer also sells a PVDC product in solution form, which contains about 10% polymerized VDC. These products, too, are used for flame-resistant coatings and saturants."

4. Polymerization Process: PVDC Synthetic Fibers

"About 16 million pounds of VDC were used to manufacture synthetic fibers in 1974. Only three companies are involved in this activity, - - - - - -. Tennessee Eastman is by far the major producer, followed by Monsanto and American Cyanamid. The Tennessee Eastman product is called VEREL, and Monsanto's product is called ACRILAN. Monsanto's·modacrylic fiber is based on a polymer that contains not only VDC to improve flame resistance but also vinyl bromide."

5. Fabrication: PVDC-Coated Cellophane

"Only three companies manufacture cellophane: DuPont, FMC, and Olin. Dupont accounts for about 50% of the market, FMC about 30%, and Olin about 20%. Each of these companies manufactures PVDC-coated cellophane, some more than others. - - - - - - Note that most plants in this industry are relatively old. The two newest ones are operated by DuPont (Tecumseh, KS) and FMC (Marcus Hook, PA). The largest cellophane plants have a capacity of 200,000 lbs./day or 80 million lbs./year, and the small ones produce about half this amount."

6. Fabrication: Extruded PVDC Products

"For the most part, the thermoplastic PVDC resin is used in extrusion processes by six companies. Amtech is the only one that extrudes PVDC monofilament. The others manufacture a variety of PVDC film products. Cryovac is the major consumer of the extrusion resin (mostly the emulsion type) and Oscar Meyer is Number 2 (Mostly the suspension type). - - - - - -

"Cryovac uses PVDC in coextrusion and in laminate constructions. It is not only a PVDC fabricator but it converts the resulting film into bags and sheets, and prints. Most of Cryovac's output is sold to packagers. Oscar Meyer, on the other hand, is both fabricator-converter and packager, whereas American Can Co. and Union Carbide Corp. sell their product to packagers. Dow Chemical is a monomer and resin producer as well as fabricator-converter.

"We estimate that about 45 million pounds of PVDC resins was extruded in 1974, including a few million pounds that was supplied by a foreign resin supplier. We believe that only one fabricator uses this foreign source. Approximately equal volumes of the suspension and emulsion resins were used by the manufacturers - - - - - -"

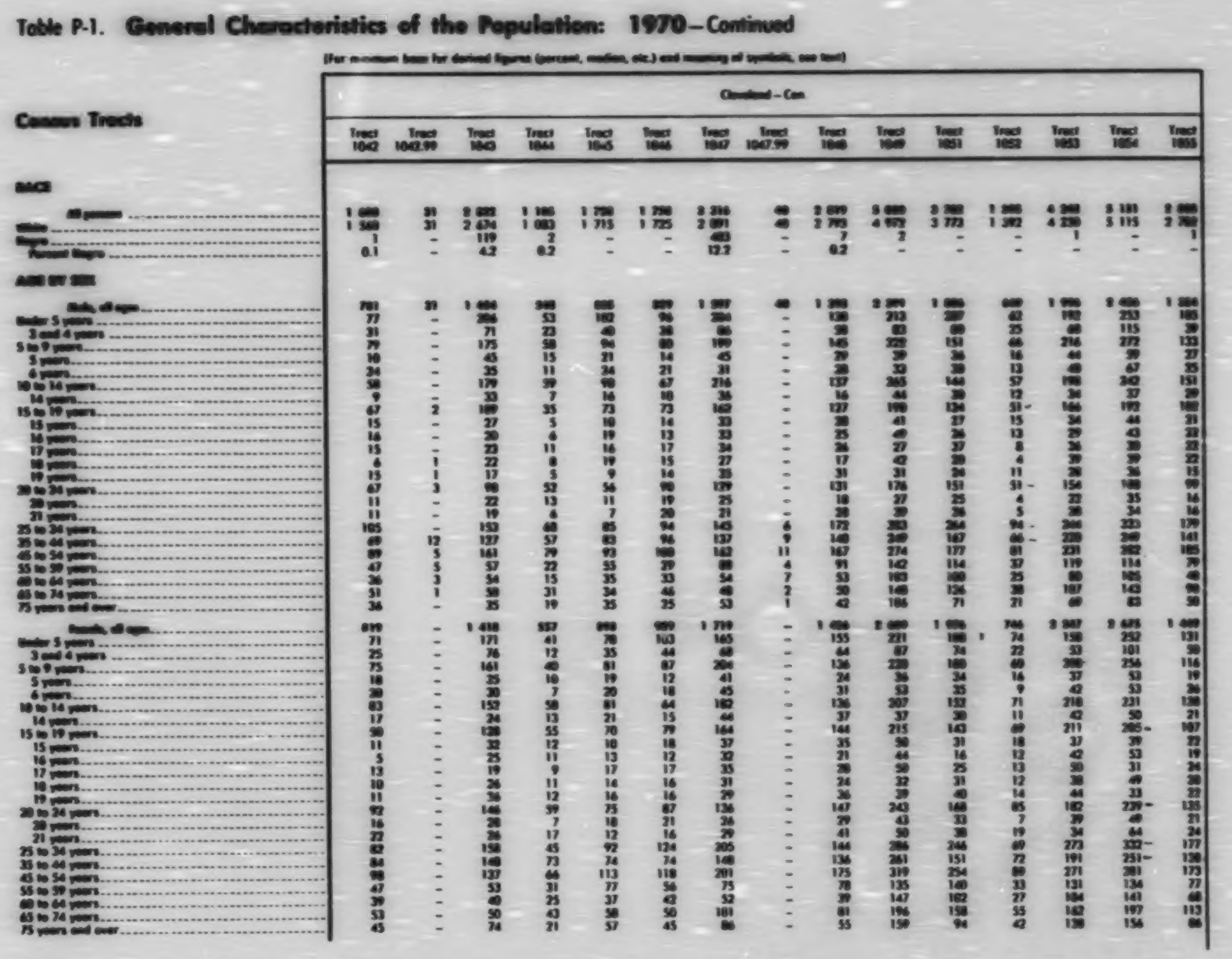


Table P-1. General Characteristics of the Population: 1970—Continued

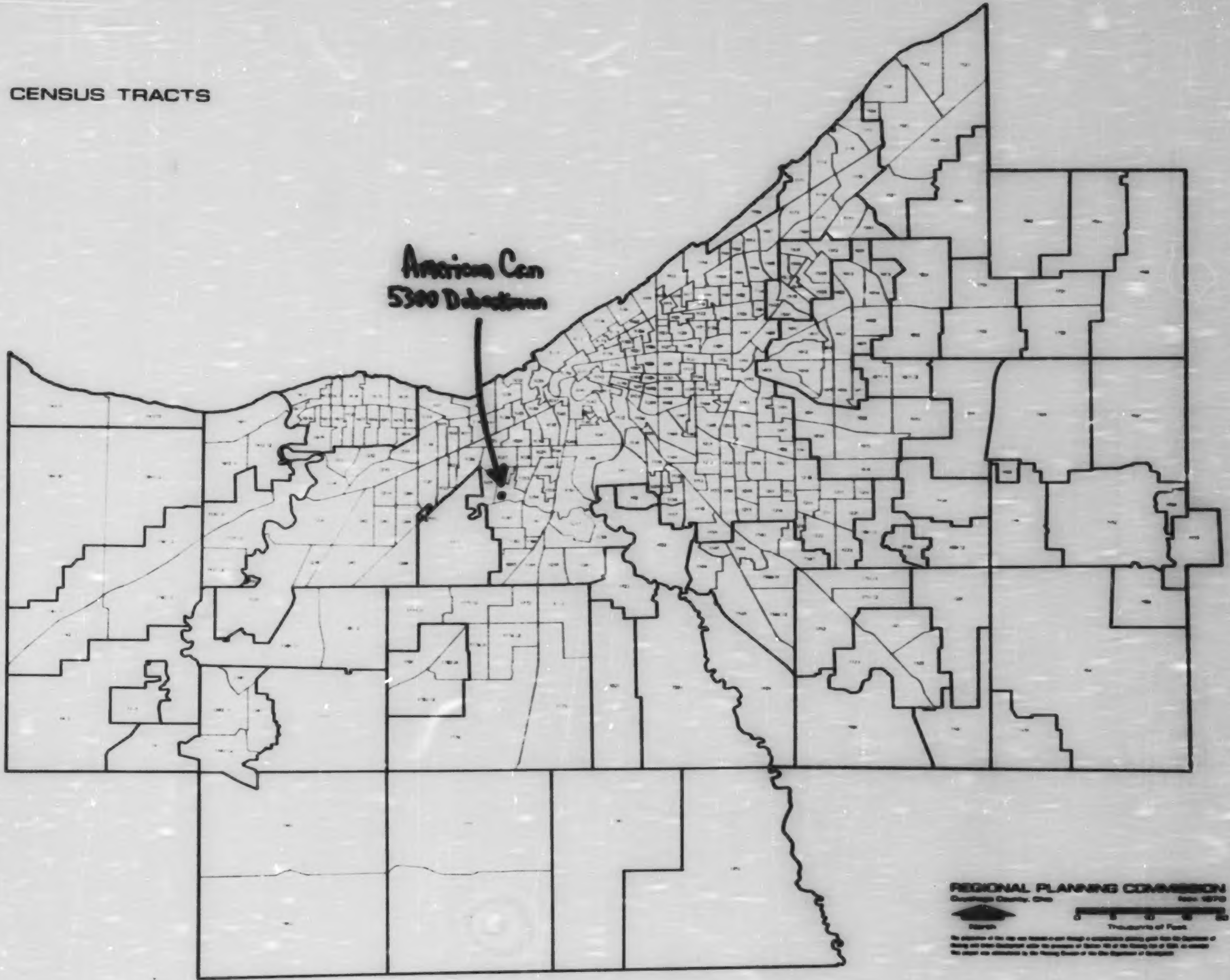
(For minimum base for derived figures (percent, median, etc.) and meaning of symbols, see text)

Appendix IV
Sample of Page from "Census Tracts-Series PHC-1"

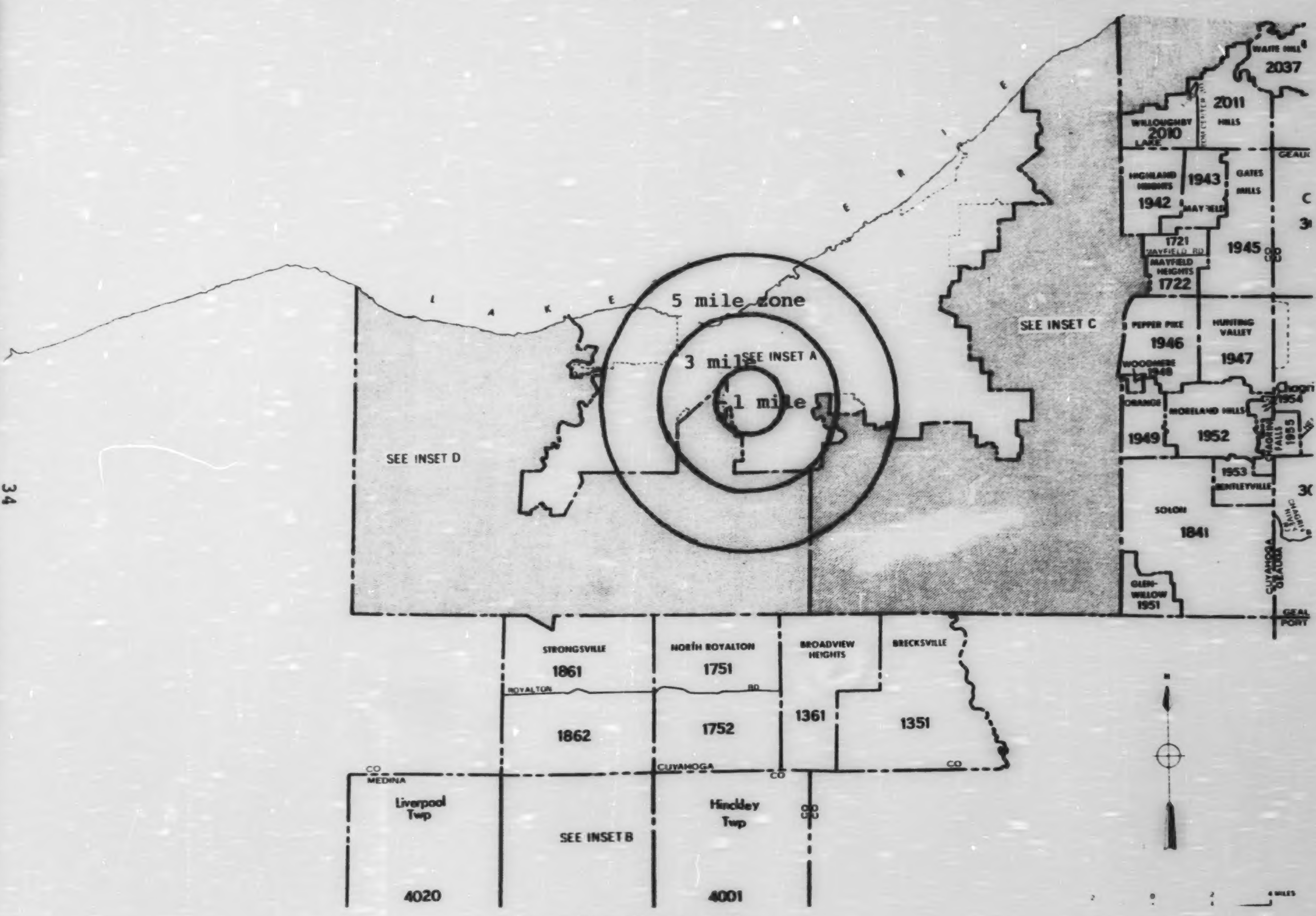
Appendix V. Example of a Tracted Area

A typical example of the mapping procedure followed is the case for Cleveland, Ohio. The plant is located in census tract 1052 and its exact location within the tract is indicated in Appendix Figure V-a, which is the map mailed to us by the Regional Planning Commission for Cuyahoga County, Ohio. The appropriate portions of the census tract maps for the Cleveland Standard Metropolitan Area are shown in Appendix Figures V-b, V-c, V-d and V-e.

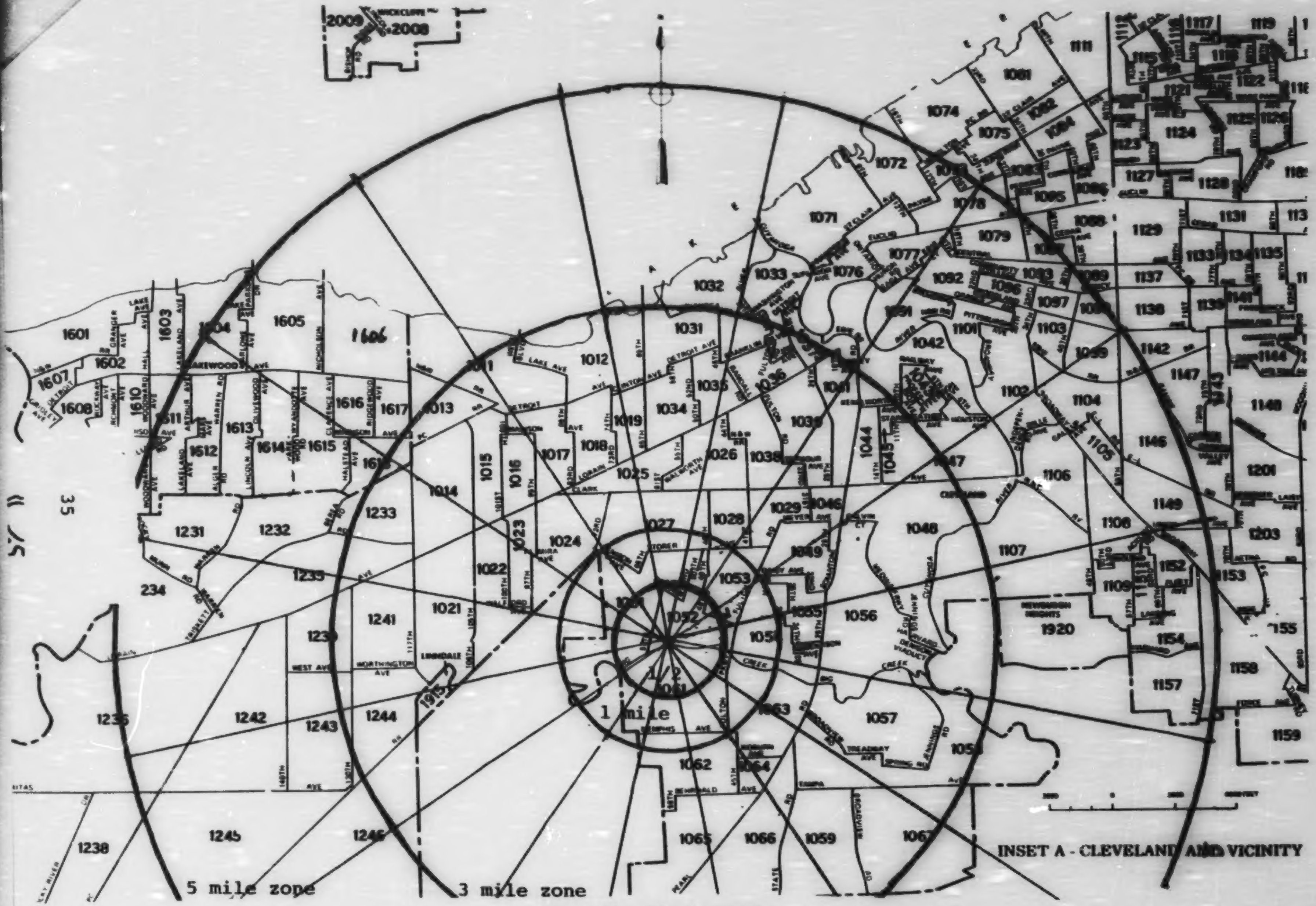
The plant and the four concentric circles were plotted on the map shown in Appendix Figure V-b in order to see how many of the inset maps the area extends into. The plant, the four concentric circles, and the sixteen direction lines were then plotted on each of the inset maps as shown in Appendix Figures V-c, V-d, and V-e. It should be noted that the scale varies from map to map.


CENSUS TRACTS
American Can
5300 Dobsontown
REGIONAL PLANNING COMMISSION
Cuyahoga County, Ohio
Nov. 1970
North
Thousands of Feet

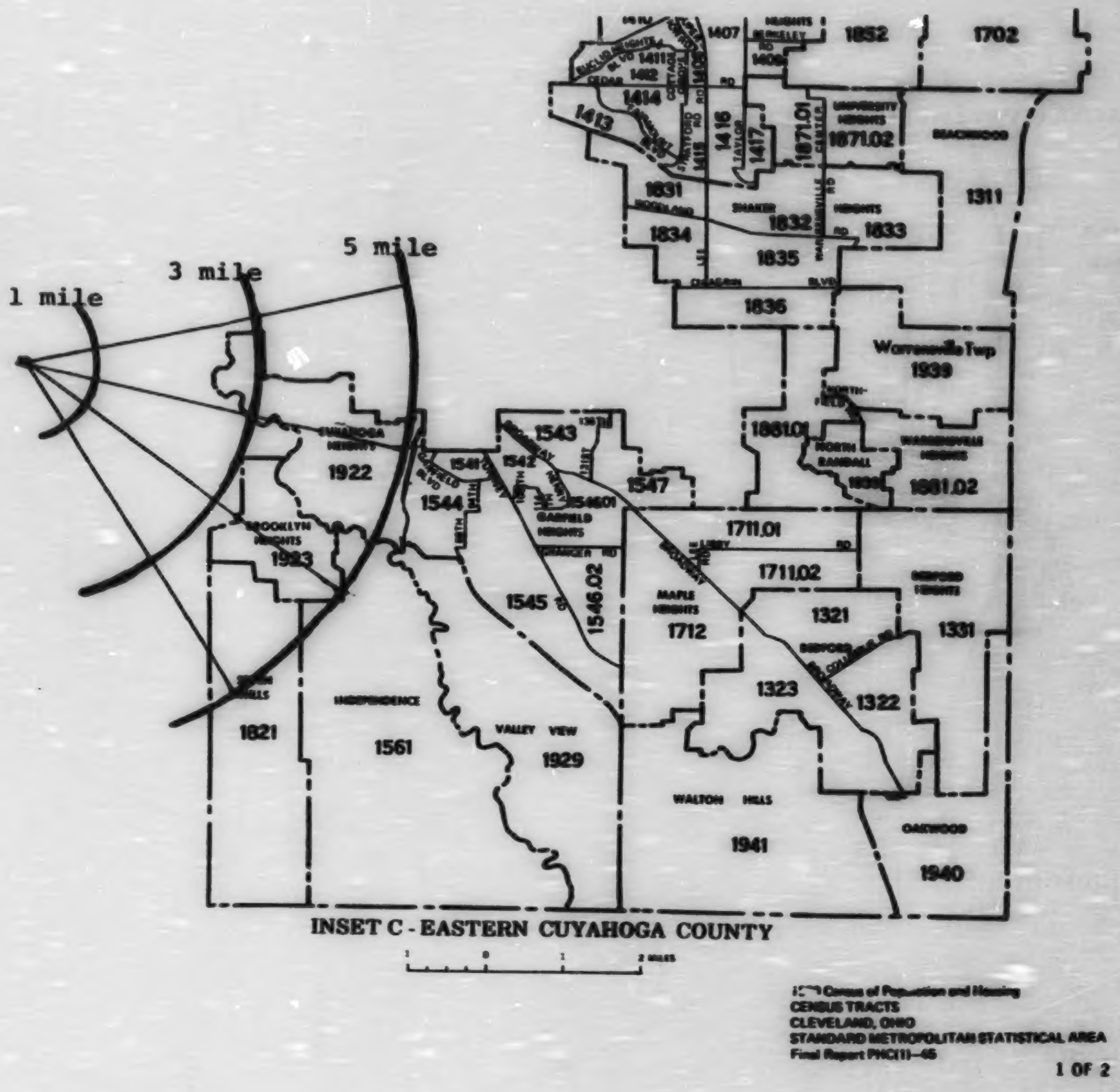
Appendix Figure V-a
Location of Plant Indicated by Regional Planning Commission


5 mile zone
3 mile
1 mile
SEE INSET A
SEE INSET C
SEE INSET D
SEE INSET B
L A K E E R I E
WAITE HILL
2037
2011
HILLS
WILLOUGHBY
2010
LAKE
HIGHLAND HEIGHTS
1942
1943
MAYFIELD
GATES MILLS
1721
MAYFIELD RD
MAYFIELD HEIGHTS
1722
1945
PEPPER PIKE
1946
HUNTING VALLEY
1947
WOODMERE
1948
ORANGE
1949
MORELAND HILLS
1952
Chagrin
1954
CHAGRIN FALLS
1955
1953
BENTLEYVILLE
SOLON
1841
GLENWILLOW
1951
CHAGRIN RIVER
CUYAHOGA
GEAUGA
STRONGSVILLE
1861
NORTH ROYALTON
1751
ROYALTON RD
BROADVIEW HEIGHTS
1361
BRECKSVILLE
1351
1862
1752
CO
MEDINA
CUYAHOGA
Liverpool Twp
4020
Hinckley Twp
4001
4 MILES

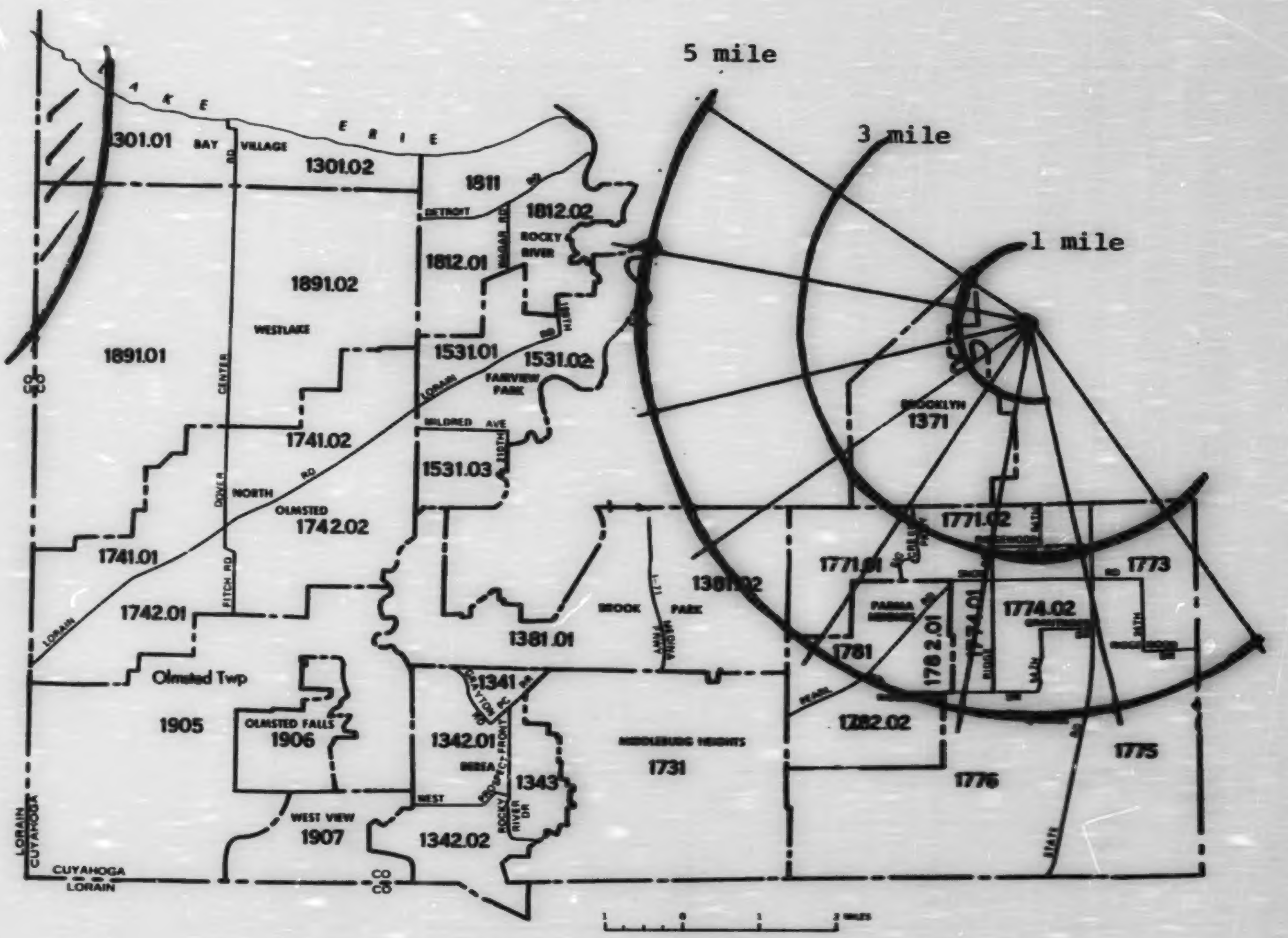
Appendix Figure V-b
Map of Census Tracts, Bureau of the Census


INSET A - CLEVELAND AND VICINITY
1/2
1 mile
3 mile zone
5 mile zone

Appendix Figure V-C
Inset A to Map of Census Tracts, Bureau of the Census


1 mile
3 mile
5 mile
INSET C - EASTERN CUYAHOGA COUNTY
1702
1852
1407
1406
1411
1412
1413
1414
1415
1416
1417
1871.01
1871.02
UNIVERSITY HEIGHTS
BEACHWOOD
1311
1831
1832
1833
1834
1835
1836
SHAKER HEIGHTS
CHAGRIN BLVD
Warrensville Twp
1939
1881.01
1881.02
NORTH RANDALL
WARRENSVILLE HEIGHTS
1543
1542
1541
1544
1545
1546.01
1546.02
1547
GARFIELD HEIGHTS
1711.01
1711.02
MAPLE HEIGHTS
1712
1321
1322
1323
BEDFORD
BEDFORD HEIGHTS
1331
CUYAHOGA HEIGHTS
1922
BROOKLYN HEIGHTS
1923
INDEPENDENCE
1561
1821
VALLEY VIEW
1929
WALTON HILLS
1941
OAKWOOD
1940
1 0 1 2 MILES
CENSUS TRACTS
CLEVELAND, OHIO
STANDARD METROPOLITAN STATISTICAL AREA
Final Report PHC(1)-45
1 OF 2

Appendix Figure V-d
Inset C to Map of Census Tracts, Bureau of the Census


5 mile
3 mile
1 mile
LAKE ERIE
1301.01
BAY VILLAGE
1301.02
1811
DETROIT
1812.02
ROCKY RIVER
1812.01
1891.02
WESTLAKE
1891.01
1531.01
1531.02
FAIRVIEW PARK
LORAIN
MILDRED AVE
1531.03
1741.02
NORTH OLMSTED
1742.02
1741.01
1742.01
CENTER
DOVER
FITCH RD
Olmsted Twp
1905
OLMSTED FALLS
1906
WEST VIEW
1907
1381.01
BROOK PARK
1381.02
MEDINA FWY
I-71
1341
1342.01
BEREA
1343
1342.02
ROCKY RIVER DR
WEST
MIDDLEBURG HEIGHTS
1731
BROOKLYN
1371
1771.02
1771.01
PARMA HEIGHTS
1781
1782.01
1774.01
1774.02
1773
1782.02
1776
1775
PEARL
STATE
CUYAHOGA
LORAIN
CO
CO

INSET D - WESTERN CUYAHOGA COUNTY

Appendix Figure V- e
Inset D to Map of Census Tracts, Bureau of the Census

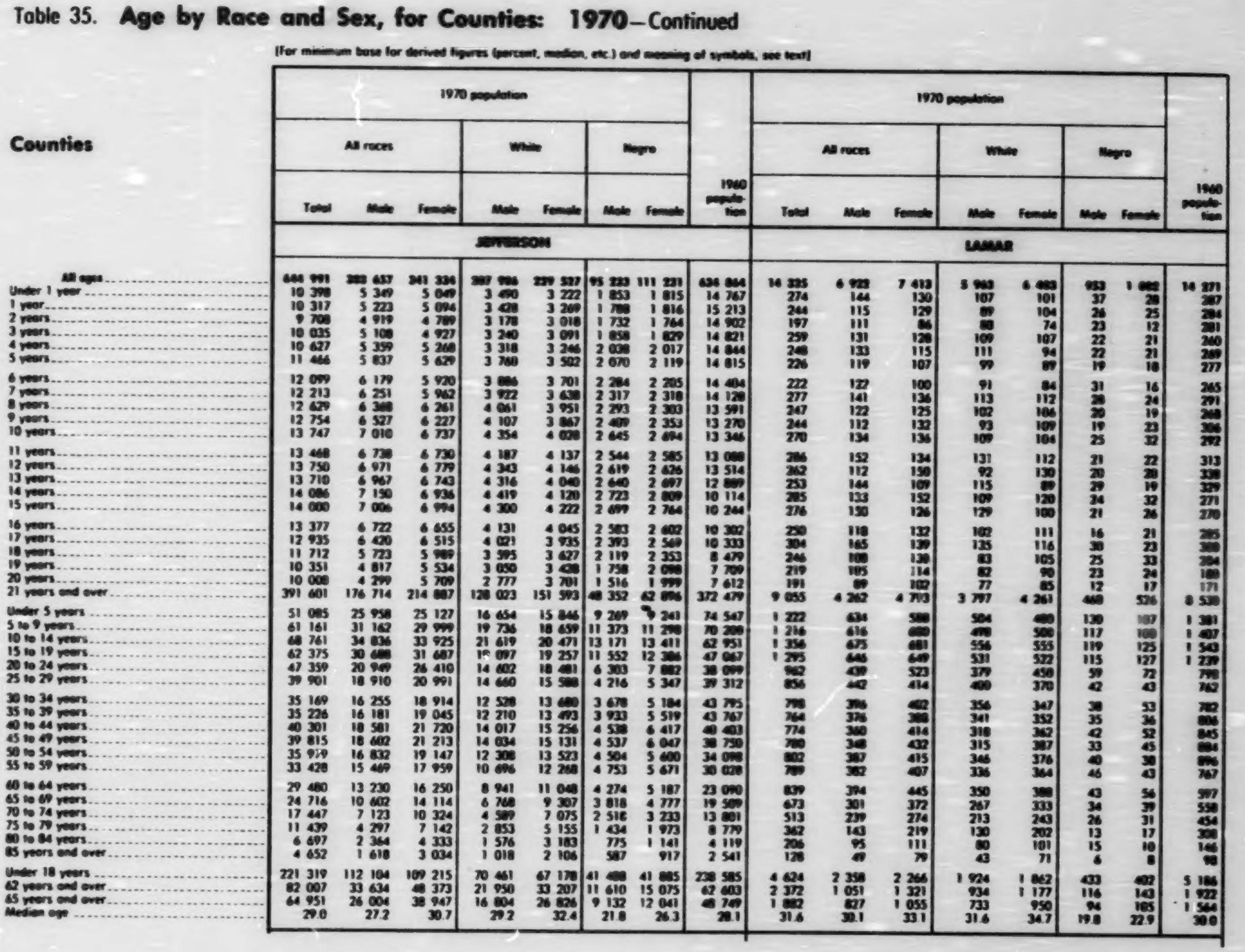


Table 35. **Age by Race and Sex, for Counties: 1970**—Continued

[For minimum base for derived figures (percent, median, etc.) and meaning of symbols, see text]

Counties	1970 population							1960 population
	All races			White		Negro		
	Total	Male	Female	Male	Female	Male	Female	
	JEFFERSON							
All ages	644 991	303 657	341 334	207 986	229 537	95 223	111 231	634 864
Under 1 year	10 398	5 349	5 049	3 490	3 222	1 853	1 815	14 767
1 year	10 317	5 223	5 094	3 428	3 269	1 788	1 816	15 213
2 years	9 708	4 919	4 789	3 178	3 018	1 732	1 764	14 902
3 years	10 035	5 108	4 927	3 240	3 091	1 858	1 829	14 821
4 years	10 627	5 359	5 268	3 318	3 246	2 038	2 017	14 844
5 years	11 466	5 837	5 629	3 760	3 502	2 070	2 119	14 815
6 years	12 099	6 179	5 920	3 886	3 701	2 284	2 205	14 404
7 years	12 213	6 251	5 962	3 922	3 638	2 317	2 318	14 128
8 years	12 629	6 368	6 261	4 061	3 951	2 293	2 303	13 591
9 years	12 754	6 527	6 227	4 107	3 867	2 409	2 353	13 270
10 years	13 747	7 010	6 737	4 354	4 028	2 645	2 694	13 346
11 years	13 468	6 738	6 730	4 187	4 137	2 544	2 585	13 088
12 years	13 750	6 971	6 779	4 343	4 146	2 619	2 626	13 514
13 years	13 710	6 967	6 743	4 316	4 040	2 640	2 697	12 889
14 years	14 086	7 150	6 936	4 419	4 120	2 723	2 809	10 114
15 years	14 000	7 006	6 994	4 300	4 222	2 699	2 764	10 244
16 years	13 377	6 722	6 655	4 131	4 045	2 583	2 602	10 302
17 years	12 935	6 420	6 515	4 021	3 935	2 393	2 569	10 333
18 years	11 712	5 723	5 989	3 595	3 627	2 119	2 353	8 479
19 years	10 351	4 817	5 534	3 050	3 428	1 758	2 098	7 709
20 years	10 008	4 299	5 709	2 777	3 701	1 516	1 999	7 612
21 years and over	391 601	176 714	214 887	128 023	151 593	48 352	62 896	372 479
Under 5 years	51 085	25 958	25 127	16 654	15 846	9 269	9 241	74 547
5 to 9 years	61 161	31 162	29 999	19 736	18 659	11 373	11 298	70 209
10 to 14 years	68 761	34 836	33 925	21 619	20 471	13 171	13 411	62 951
15 to 19 years	62 375	30 688	31 687	19 097	19 257	11 552	12 386	47 067
20 to 24 years	47 359	20 949	26 410	14 602	18 481	6 303	7 882	38 099
25 to 29 years	39 901	18 910	20 991	14 660	15 588	4 216	5 347	39 312
30 to 34 years	35 169	16 255	18 914	12 528	13 680	3 678	5 184	43 795
35 to 39 years	35 226	16 181	19 045	12 210	13 493	3 933	5 519	43 767
40 to 44 years	40 301	18 581	21 720	14 017	15 256	4 538	6 417	40 403
45 to 49 years	39 815	18 602	21 213	14 034	15 131	4 537	6 047	38 750
50 to 54 years	35 979	16 832	19 147	12 308	13 523	4 504	5 600	34 098
55 to 59 years	33 428	15 469	17 959	10 696	12 268	4 753	5 671	30 028
60 to 64 years	29 480	13 230	16 250	8 941	11 048	4 274	5 187	23 090
65 to 69 years	24 716	10 602	14 114	6 768	9 307	3 818	4 777	19 509
70 to 74 years	17 447	7 123	10 324	4 589	7 075	2 516	3 233	13 801
75 to 79 years	11 439	4 297	7 142	2 853	5 155	1 434	1 973	8 779
80 to 84 years	6 697	2 364	4 333	1 576	3 183	775	1 141	4 119
85 years and over	4 652	1 618	3 034	1 018	2 106	587	917	2 541
Under 18 years	221 319	112 104	109 215	70 461	67 178	41 488	41 885	238 585
62 years and over	82 007	33 634	48 373	21 950	33 207	11 610	15 075	62 603
65 years and over	64 951	26 004	38 947	16 804	26 826	9 132	12 041	48 749
Median age	29.0	27.2	30.7	29.2	32.4	21.8	26.3	28.1

Counties	1970 population							1960 population
	All races			White		Negro		
	Total	Male	Female	Male	Female	Male	Female	
	LAMAR							
All ages	14 335	6 922	7 413	5 963	6 403	953	1 002	14 271
Under 1 year	274	144	130	107	101	37	28	287
1 year	244	115	129	89	104	26	25	294
2 years	197	111	86	88	74	23	12	281
3 years	259	131	128	109	107	22	21	260
4 years	248	133	115	111	94	22	21	269
5 years	226	119	107	99	89	19	18	277
6 years	222	122	100	91	84	31	16	265
7 years	277	141	136	113	112	28	24	271
8 years	247	122	125	102	106	20	19	268
9 years	244	112	132	93	109	19	23	306
10 years	270	134	136	109	104	25	32	292
11 years	286	152	134	131	112	21	22	313
12 years	262	112	150	92	130	20	20	338
13 years	253	144	109	115	89	29	19	329
14 years	285	133	152	109	120	24	32	271
15 years	276	150	126	129	100	21	26	270
16 years	250	118	132	102	111	16	21	285
17 years	304	165	139	135	116	30	23	300
18 years	246	108	138	83	105	25	33	284
19 years	219	105	114	82	90	23	24	180
20 years	191	89	102	77	85	12	17	171
21 years and over	9 055	4 262	4 793	3 797	4 261	460	526	8 530
Under 5 years	1 222	634	588	504	480	130	107	1 381
5 to 9 years	1 216	616	600	498	500	117	100	1 407
10 to 14 years	1 356	675	681	556	555	119	125	1 543
15 to 19 years	1 295	646	649	531	522	115	127	1 239
20 to 24 years	962	439	523	379	450	59	72	790
25 to 29 years	856	442	414	400	370	42	43	762
30 to 34 years	798	396	402	356	347	38	53	782
35 to 39 years	764	376	388	341	352	35	36	806
40 to 44 years	774	360	414	318	362	42	52	845
45 to 49 years	780	348	432	315	387	33	45	884
50 to 54 years	802	387	415	346	376	40	38	896
55 to 59 years	789	382	407	336	364	46	43	767
60 to 64 years	839	394	445	350	388	43	56	597
65 to 69 years	673	301	372	267	333	34	39	558
70 to 74 years	513	239	274	213	243	26	31	454
75 to 79 years	362	143	219	130	202	13	17	308
80 to 84 years	206	95	111	80	101	15	10	146
85 years and over	128	49	79	43	71	6	8	98
Under 18 years	4 624	2 358	2 266	1 924	1 862	433	402	5 186
62 years and over	2 372	1 051	1 321	934	1 177	116	143	1 922
65 years and over	1 882	827	1 055	733	950	94	105	1 564
Median age	31.6	30.1	33.1	31.6	34.7	19.8	22.9	30.0

Appendix VI
Sample of Page from "General Population Characteristics-Series PC-1B"

Appendix VII

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE BY AGE AND SEX

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
ALABAMA													
Decatur													
Monsanto Co.													
Minnesota Mining & Manufacturing Co.													
0 – ½	423	4	4	16	16	46	44	89	89	39	42	13	21
½ – 1	1,690	17	17	68	68	186	170	353	353	152	169	52	85
1 – 3	13,293	133	133	532	532	1,463	1,336	2,784	2,784	1,196	1,329	406	665
3 – 5	23,012	230	230	921	921	2,531	2,313	4,820	4,820	2,071	2,301	703	1,151
TOTAL	38,418	384	384	1,537	1,537	4,226	3,863	8,046	8,046	3,458	3,841	1,174	1,922

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
CALIFORNIA Vernon Oscar Meyer & Co.													
0 – ½	53	1	1	3	2	4	4	16	9	4	4	2	3
½ – 1	209	3	3	13	10	18	14	63	37	15	16	6	11
1 – 3	149,329	1,787	1,774	6,772	6,467	14,614	14,702	29,097	30,810	12,517	15,202	6,107	9,480
3 – 5	349,739	3,906	3,863	15,319	15,241	34,944	34,758	71,670	70,395	32,654	34,352	14,556	18,181
TOTAL	499,330	5,697	5,641	22,107	21,720	49,480	49,478	100,846	101,251	45,190	49,574	20,671	27,675

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
DELAWARE Cheswold Reichhold Polymers, Inc.													
0 – ½	260	3	3	9	10	29	29	60	57	21	21	8	10
½ – 1	1,040	10	10	43	42	114	114	239	229	83	83	31	42
1 – 3	8,182	82	82	327	327	900	900	1,882	1,800	665	656	245	327
3 – 5	14,165	141	141	567	567	1,558	1,558	3,259	3,116	1,133	1,133	425	667
TOTAL	23,647	236	236	946	946	2,601	2,601	5,440	5,202	1,892	1,892	709	946

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
FLORIDA Pace American Cyanimid Co.													
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	0	-	-	-	-	-	-	-	-	-	-	-	-
1 – 3	2,121	21	17	79	75	247	234	463	483	167	184	69	82
3 – 5	2,828	28	22	105	100	330	312	617	644	222	246	92	110
TOTAL	4,949	49	39	184	175	577	546	1,080	1,127	389	430	161	192

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (in miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
GEORGIA Dalton Dow Chemical Co.													
0 – ½	128	1	1	5	5	14	13	27	29	12	12	4	5
½ – 1	513	6	6	20	20	55	51	106	114	48	48	17	22
1 – 3	4,032	40	40	161	161	433	403	835	904	374	375	133	173
3 – 5	6,981	70	70	278	278	749	698	1,446	1,565	648	650	230	299
TOTAL	11,654	117	117	464	464	1,251	1,165	2,414	2,612	1,082	1,085	384	499

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
ILLINOIS Chicago Oscar Meyer & Co.													
0 – ½	17,937	111	107	426	422	1,130	1,186	4,239	5,332	1,612	1,668	735	969
½ – 1	39,348	280	299	1,186	1,226	3,777	3,842	8,000	9,915	3,004	3,785	1,579	2,455
1 – 3	132,512	1,123	1,008	4,048	3,781	8,731	8,478	29,232	28,823	15,872	14,676	7,565	9,175
3 – 5	312,409	3,011	3,015	12,161	11,711	30,562	30,075	63,863	67,018	28,744	31,473	12,876	17,900
TOTAL	502,206	4,525	4,429	17,821	17,140	44,200	43,581	105,334	111,088	49,232	51,602	22,755	30,499

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
ILLINOIS													
Lemont													
A. E. Staley Manufacturing Co.													
0 – ½	647	5	5	23	21	71	66	129	122	66	65	27	47
½ – 1	647	5	5	23	21	71	66	129	122	66	65	27	47
1 – 3	13,514	118	130	527	545	2,137	2,086	2,885	2,977	903	760	167	279
3 – 5	23,953	261	252	1,105	1,054	2,927	2,906	5,803	5,244	1,868	1,639	385	529
TOTAL	38,761	389	392	1,678	1,641	5,206	5,124	8,946	8,465	2,903	2,529	586	902

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
ILLINOIS Meredosia National Starch & Chemical Corp.													
0 – ½	34	-	-	1	1	3	3	6	7	4	4	2	3
½ – 1	134	1	1	4	4	12	12	24	25	14	15	9	13
1 – 3	1,057	11	11	31	31	99	99	186	198	112	115	69	95
3 – 5	1,829	18	18	54	54	171	171	322	342	193	200	120	166
TOTAL	3,054	30	30	90	90	285	285	538	572	323	334	200	277

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
ILLINOIS Ringwood Morton Chemical Co.													
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	2,299	19	18	83	77	266	242	416	436	231	253	120	138
1 – 3	11,985	103	91	427	404	1,383	1,266	2,149	2,281	1,216	1,328	619	718
3 – 5	13,609	115	103	494	443	1,631	1,476	2,504	2,579	1,366	1,447	678	773
TOTAL	27,893	237	212	1,004	924	3,280	2,984	5,069	5,296	2,813	3,028	1,417	1,629

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
INDIANA Covington Olin Corp.													
0 – ½	49	-	1	2	1	5	5	9	9	5	5	3	4
½ – 1	196	2	2	7	6	20	20	37	37	20	21	10	14
1 – 3	1,538	15	15	57	46	154	154	288	291	156	169	81	112
3 – 5	2,662	27	26	99	81	266	266	499	503	269	293	140	193
TOTAL	4,445	44	44	165	134	445	445	833	840	450	488	234	323

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
IOWA Cedar Rapids Cryovac Division													
0 – ½	2,766	27	24	106	97	275	255	536	569	287	324	107	159
½ – 1	5,270	51	48	196	185	542	486	1,035	1,088	563	616	186	274
1 – 3	40,651	379	359	1,468	1,405	3,677	3,624	8,007	8,968	3,805	4,085	1,822	3,052
3 – 5	56,854	537	531	2,216	2,119	6,231	6,038	11,311	12,798	5,017	5,404	1,731	2,921
TOTAL	105,541	994	962	3,986	3,806	10,725	10,403	20,889	23,423	9,672	10,429	3,846	6,406

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
IOWA Centerville Union Carbide Corp.													
0 – ½	91	1	1	3	3	8	7	15	15	10	11	7	10
½ – 1	364	4	4	11	11	33	29	58	58	40	47	29	40
1 – 3	2,866	29	29	86	86	256	229	459	458	315	373	229	315
3 – 5	4,962	49	49	148	148	446	398	794	794	546	646	398	546
TOTAL	8,283	83	83	248	248	745	663	1,326	1,325	911	1,077	663	911

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
IOWA Clinton DuPont													
0 – ½	370	4	4	15	12	40	40	67	67	37	40	18	26
½ – 1	1,480	15	15	59	45	163	162	267	268	148	162	73	103
1 – 3	11,641	116	116	466	356	1,280	1,274	2,102	2,109	1,165	1,274	575	808
3 – 5	20,153	201	201	806	616	2,216	2,205	3,640	3,652	2,016	2,206	996	1,398
TOTAL	33,644	336	336	1,346	1,029	3,699	3,681	6,076	6,096	3,366	3,682	1,662	2,335

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (in miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
IOWA Davenport Oscar Mayer & Co.													
0 – ½	3,258	32	35	130	141	319	279	547	686	315	337	175	262
½ – 1	9,283	89	77	351	318	900	860	1,621	2,017	848	883	523	796
1 – 3	94,020	814	805	3,368	3,190	9,109	8,794	17,912	18,818	9,374	10,560	4,439	6,837
3 – 5	67,608	595	550	2,437	2,323	7,094	6,819	12,925	13,886	7,041	7,444	2,626	3,868
TOTAL	174,169	1,530	1,467	6,286	5,972	17,422	16,752	33,005	35,407	17,578	19,224	7,763	11,763

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
KANSAS Tecumseh DuPont Co.													
0 – ½	12	-	-	-	-	2	1	2	3	1	1	1	1
½ – 1	560	4	5	22	19	72	69	118	117	47	47	20	20
1 – 3	3,771	31	31	143	117	479	415	743	768	350	346	167	181
3 – 5	29,656	310	307	1,214	1,186	3,181	3,068	5,554	6,108	2,627	2,809	1,415	1,877
TOTAL	33,999	345	343	1,379	1,322	3,734	3,553	6,417	6,996	3,025	3,203	1,603	2,079

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
KENTUCKY Owensboro Dewey & Almy Chemcial Division													
0 – ½	216	2	2	9	9	24	24	40	43	19	22	9	13
½ – 1	866	9	9	35	35	95	95	164	173	78	86	35	52
1 – 3	6,808	68	68	272	272	749	749	1,294	1,361	613	681	272	409
3 – 5	11,787	118	118	471	471	1,296	1,296	2,241	2,358	1,061	1,179	471	707
TOTAL	19,677	197	197	787	787	2,164	2,164	3,739	3,935	1,771	1,968	787	1,181

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
LOUISIANA Lake Charles PPG Industries, Inc.													
0 – ½	51	1	1	3	2	5	6	10	11	5	4	1	2
½ – 1	51	1	1	3	2	5	6	10	11	5	4	1	2
1 – 3	9,712	85	89	349	365	1,158	1,193	2,031	2,109	930	922	216	265
3 – 5	45,227	404	370	1,551	1,464	4,643	4,465	9,178	10,001	4,430	4,977	1,496	2,248
TOTAL	55,041	491	461	1,906	1,833	5,811	5,670	11,229	12,132	5,370	5,907	1,714	2,517

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
LOUISIANA Plaquemine Dow Chemical Co.													
0 – ½	240	2	2	10	10	30	29	44	50	21	21	8	13
½ – 1	960	10	10	40	40	119	115	176	199	83	85	33	50
1 – 3	7,548	75	75	313	313	938	902	1,386	1,569	652	668	259	398
3 – 5	13,068	131	131	542	542	1,624	1,560	2,398	2,717	1,129	1,156	448	690
TOTAL	21,816	218	218	905	905	2,711	2,606	4,004	4,535	1,885	1,930	748	1,151

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
MARYLAND Odenton Amtech, Inc.													
0 – ½	856	8	7	30	31	102	101	178	194	92	79	16	18
½ – 1	1,925	18	15	71	72	231	239	398	447	199	173	26	36
1 – 3	7,409	71	60	307	280	894	921	1,587	1,687	688	642	112	160
3 – 5	33,792	365	332	1,456	1,391	3,639	3,493	12,600	6,824	1,551	1,400	315	426
TOTAL	43,982	462	414	1,864	1,774	4,866	4,754	14,763	9,152	2,530	2,294	469	640

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
MICHIGAN Midland Dow Chemical Co.													
0 – ½	444	4	4	18	18	54	52	97	98	40	36	9	14
½ – 1	1,775	18	18	71	71	213	212	389	390	160	143	36	54
1 – 3	13,960	140	140	558	558	1,675	1,669	3,057	3,071	1,256	1,123	287	436
3 – 5	24,168	242	242	967	967	2,900	2,889	5,293	5,316	2,175	1,945	495	737
TOTAL	40,347	404	404	1,614	1,614	4,842	4,822	8,836	8,875	3,631	3,247	827	1,231

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
NORTH CAROLINA Pisgah Forest Olin Corp.													
0 – ½	72	1	1	3	2	7	7	16	16	7	7	2	3
½ – 1	287	3	3	11	8	29	29	63	63	29	29	8	12
1 – 3	2,256	22	22	89	67	224	224	492	493	226	229	72	96
3 – 5	3,905	39	39	154	114	388	388	852	855	390	395	125	166
TOTAL	6,520	65	65	257	191	648	648	1,423	1,427	652	660	207	277

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
OHIO Avon Lake B.F. Goodrich Chemical Co.													
0 – ½	1,267	12	11	49	51	174	170	257	280	109	108	18	28
½ – 1	2,618	23	23	103	104	356	348	530	576	228	228	39	60
1 – 3	8,602	81	78	365	336	1,208	1,081	1,754	1,864	758	751	135	191
3 – 5	20,000	187	170	778	749	2,492	2,370	3,861	4,107	1,927	2,026	573	760
TOTAL	32,487	303	282	1,295	1,240	4,230	3,969	6,402	6,827	3,022	3,113	765	1,039

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
OHIO Circleville DuPont Co.													
0 – ½	305	3	2	12	11	38	36	58	65	28	28	13	11
½ – 1	305	3	2	12	11	38	36	58	65	28	28	13	11
1 – 3	914	9	7	37	33	112	109	175	195	83	83	38	33
3 – 5	8,704	86	78	345	310	844	844	1,661	1,894	755	881	415	591
TOTAL	10,228	101	89	406	365	1,032	1,025	1,952	2,219	894	1,020	479	646

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1978.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
OHIO Cleveland American Can Co.													
0 – ½	4,054	33	36	135	135	306	329	711	757	490	573	230	319
½ – 1	15,004	133	131	552	510	1,338	1,356	2,728	2,903	1,622	1,897	738	1,086
1 – 3	207,033	1,953	1,914	7,797	7,543	19,132	18,670	39,659	41,911	21,662	25,019	8,804	12,988
3 – 5	216,840	1,856	1,725	7,211	6,918	19,179	18,348	39,953	42,953	24,338	28,074	10,280	16,005
TOTAL	442,931	3,975	3,806	15,685	15,106	39,955	38,703	83,051	88,524	48,112	55,563	20,052	30,398

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
PENNSYLVANIA Bristol Rohm & Haas Co.													
0 – ½	2,624	26	21	102	86	242	234	490	522	291	331	111	168
½ – 1	8,018	79	65	307	271	771	735	1,497	1,602	880	999	336	476
1 – 3	49,351	482	494	1,883	1,843	5,299	5,155	9,938	10,690	4,948	5,129	1,457	2,033
3 – 5	79,000	731	727	3,081	3,038	9,931	9,405	16,582	17,842	7,538	6,878	1,279	1,968
TOTAL	138,993	1,318	1,307	5,373	5,238	16,243	15,529	28,507	30,656	13,657	13,337	3,183	4,645

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
PENNSYLVANIA Marcus Hook FMC Corp.													
0 – ½	1,379	12	10	50	44	121	129	255	269	163	179	67	80
½ – 1	10,213	89	75	359	316	999	1,003	1,868	2,025	1,132	1,309	432	606
1 – 3	58,872	633	634	2,459	2,463	6,236	6,262	11,399	13,096	5,421	6,120	1,852	2,297
3 – 5	80,022	653	627	2,796	2,658	8,609	8,373	15,830	16,296	8,628	8,959	2,700	3,893
TOTAL	150,486	1,387	1,346	5,664	5,481	15,965	15,767	29,352	31,686	15,344	16,567	5,051	6,876

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
PENNSYLVANIA Philadelphia Oscar Meyer & Co.													
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	2,125	7	13	33	47	142	161	846	309	206	220	70	71
1 – 3	264,361	2,256	2,134	9,044	8,634	23,725	22,994	48,373	53,054	29,070	34,874	13,072	17,131
3 – 5	360,636	2,883	2,812	11,641	11,437	30,728	29,937	72,858	76,077	37,240	42,383	17,549	25,091
TOTAL	627,122	5,146	4,959	20,718	20,118	54,595	53,092	122,077	129,440	66,516	77,477	30,691	42,293

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (in miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
SOUTH CAROLINA Simpsonville Cryovac Division													
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	767	8	6	29	27	88	78	165	171	67	73	22	33
1 – 3	3,070	30	22	117	108	351	314	660	682	270	292	90	134
3 – 5	9,354	88	83	355	356	1,153	1,153	2,082	2,140	709	771	193	271
TOTAL	13,191	126	111	501	491	1,592	1,545	2,907	2,993	1,046	1,136	305	438

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TENNESSEE Goodlettsville Oscar Meyer & Co.													
0 – ½	617	6	5	23	23	71	66	137	138	53	59	15	21
½ – 1	1,850	19	16	67	69	213	198	409	413	160	176	46	64
1 – 3	11,116	116	102	434	425	1,269	1,210	2,456	2,586	886	954	282	394
3 – 5	11,715	86	82	379	357	1,269	1,315	2,397	2,565	1,202	1,235	367	461
TOTAL	25,298	227	205	903	874	2,822	2,789	5,399	5,702	2,303	2,424	710	940

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TENNESSEE Kingsport Eastman Chemical Products, Inc.													
0 – ½	665	7	7	20	20	67	60	138	153	67	73	20	33
½ – 1	2,661	27	27	80	80	266	239	558	612	266	293	80	133
1 – 3	20,922	209	209	628	628	2,092	1,883	4,393	4,813	2,092	2,301	628	1,046
3 – 5	36,219	362	362	1,086	1,086	3,622	3,260	7,608	8,330	3,622	3,984	1,086	1,811
TOTAL	60,467	605	605	1,814	1,814	6,047	5,442	12,697	13,908	6,047	6,651	1,814	3,023

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TENNESSEE Knoxville Rohm & Haas, Inc.													
0 – ½	4,029	31	31	123	120	261	279	1,064	1,074	250	383	137	276
½ – 1	11,238	82	86	302	313	704	673	3,429	2,827	782	1,044	367	629
1 – 3	64,969	459	435	1,776	1,757	4,781	4,855	14,114	15,391	5,630	7,682	2,968	5,111
3 – 5	67,387	491	456	1,993	1,849	6,201	5,830	13,439	14,662	7,136	8,499	2,649	4,192
TOTAL	147,623	1,063	1,008	4,194	4,039	11,947	11,637	32,046	33,954	13,798	17,608	6,121	10,208

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TEXAS Iowa Park Cryovac Division													
0 – ½	1,159	8	10	41	38	152	138	249	258	81	91	39	54
½ – 1	1,159	8	10	41	38	152	138	249	258	81	91	39	54
1 – 3	3,644	26	30	125	117	474	432	777	803	266	295	126	173
3 – 5	166	1	1	3	3	17	17	30	30	22	22	10	10
TOTAL	6,128	43	51	210	196	795	725	1,305	1,349	450	499	214	291

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TEXAS Freeport Dow Chemical Co.													
0 – ½	24	-	-	1	1	2	2	5	5	3	3	1	1
½ – 1	24	-	-	1	1	2	2	5	5	3	3	1	1
1 – 3	96	1	-	3	3	7	6	22	19	12	14	5	4
3 – 5	11,935	141	129	534	469	1,237	1,093	2,583	2,576	1,286	1,178	326	383
TOTAL	12,079	142	129	539	474	1,248	1,103	2,615	2,605	1,304	1,198	333	389

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
TEXAS													
Sherman													
Oscar Meyer & Co.													
0 – ½	5	-	-	-	-	1	-	1	1	1	1	-	-
½ – 1	14	-	-	-	-	2	-	3	2	3	2	1	1
1 – 3	3,059	26	21	87	93	212	230	599	607	288	345	165	386
3 – 5	18,779	154	143	583	560	1,875	1,852	3,607	4,010	1,803	2,119	816	1,257
TOTAL	21,857	180	164	670	653	2,090	2,082	4,210	4,620	2,095	2,467	982	1,644

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
VIRGINIA Fredericksburg FMC Corp.													
0 – ½	295	3	3	9	10	26	25	59	78	27	29	10	16
½ – 1	1,181	11	11	34	40	105	100	236	315	110	117	39	63
1 – 3	9,289	93	93	271	311	822	790	1,855	2,473	863	913	306	499
3 – 5	16,081	161	161	470	538	1,423	1,366	3,211	4,282	1,495	1,581	529	864
TOTAL	26,846	268	268	784	899	2,376	2,281	5,361	7,148	2,495	2,640	884	1,442

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
VIRGINIA Richmond DuPont Co.													
0 – ½	856	12	10	46	44	71	79	207	230	67	67	10	13
½ – 1	1,998	29	23	107	102	165	184	484	536	158	158	22	30
1 – 3	14,371	163	171	603	675	1,433	1,311	3,667	3,781	1,076	1,044	176	271
3 – 5	11,553	139	140	524	490	983	936	2,644	2,741	1,136	1,205	270	345
TOTAL	28,778	343	344	1,280	1,311	2,652	2,510	7,002	7,288	2,437	2,474	478	659

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN SELECTED DISTANCES OF PLANTS PRODUCING VINYLIDENE CHLORIDE* BY AGE AND SEX

Plant location, company distance from plant (In miles)	Total M+F	AGE (in years)											
		Under 1		1 to 4		5 to 14		15 to 44		45 to 64		65 and Over	
		M	F	M	F	M	F	M	F	M	F	M	F
WISCONSIN **Madison** **Oscar Meyer & Co.**													
0 – ½	3,563	33	36	120	133	287	265	726	784	372	445	141	211
½ – 1	8,028	72	79	285	298	653	621	1,675	1,779	826	979	316	445
1 – 3	46,442	426	452	1,691	1,712	4,729	4,405	10,388	10,788	3,650	4,158	1,570	2,472
3 – 5	73,482	472	407	1,825	1,065	4,876	4,863	22,612	23,004	4,074	4,735	1,835	3,314
TOTAL	131,505	1,003	974	3,921	3,808	10,545	9,955	35,401	36,355	8,922	10,317	3,862	6,442

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

Appendix VIII

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

ALABAMA

Decatur
Monsanto Co.
Minnesota Mining & Manufacturing Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	423	6	5	6	67	134	134	-	-	6	5	10	12	11	10	12	5
½ – 1	1,690	22	22	22	268	536	536	-	-	22	22	39	46	47	40	46	22
1 – 3	13,293	173	173	173	2,106	4,212	4,212	-	-	173	173	303	370	369	320	363	173
3 – 5	23,012	300	300	300	3,646	7,292	7,292	-	-	300	300	525	640	639	550	628	300
TOTAL	38,418	501	500	501	6,087	12,174	12,174	0	0	501	500	877	1,068	1,066	920	1,049	500

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

CALIFORNIA

Vernon
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	53	6	-	5	-	5	-	6	5	5	-	5	-	6	-	5	5
½ – 1	209	21	-	21	-	21	-	21	20	21	-	21	-	21	-	21	21
1 – 3	149,329	16,614	16,412	17,829	11,011	2,722	26	12,755	18,106	5,954	10,450	9,637	5,580	3,640	3,589	556	14,448
3 – 5	349,739	32,749	29,250	15,921	22,581	2,971	2,953	30,189	21,480	30,257	26,370	31,890	24,966	37,340	17,212	9,932	13,678
TOTAL	499,330	49,390	45,662	33,776	33,592	5,719	2,979	42,971	39,611	36,237	36,820	41,553	30,546	41,007	20,801	10,514	28,152

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

DELAWARE

Cheswold
Reichhold Polymers, Inc.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	260	2	2	-	6	4	12	98	96	8	7	7	3	4	3	4	4
½ – 1	1,040	8	8	-	28	17	47	393	385	35	26	26	11	16	12	14	14
1 – 3	8,182	63	62	-	220	134	372	3,088	3,025	275	206	206	87	122	98	112	112
3 – 5	14,165	108	108	-	381	232	644	5,346	5,238	476	357	356	150	211	170	194	194
TOTAL	23,647	181	180	-	635	387	1,075	8,925	8,744	794	596	595	251	353	283	324	324

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

FLORIDA

Pace
American Cyenimid Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1 – 3	2,121	213	212	212	212	212	212	212	212	-	-	-	-	-	-	212	212
3 – 5	2,828	282	282	283	283	283	283	283	283	-	-	-	-	-	-	283	283
TOTAL	4,949	495	494	495	495	495	495	495	495	-	-	-	-	-	-	495	495

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*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

GEORGIA

Dalton
Dow Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	128	18	18	18	-	1	-	8	9	7	6	4	-	1	1	19	18
½ – 1	513	73	73	74	2	1	-	30	34	30	23	17	-	3	4	76	73
1 – 3	4,032	573	573	583	12	9	-	235	269	236	183	134	-	24	31	597	573
3 – 5	6,981	993	993	1,009	22	16	-	407	465	408	317	231	-	40	54	1,033	993
TOTAL	11,654	1,657	1,657	1,684	36	27	-	680	777	681	529	386	-	68	90	1,725	1,657

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

ILLINOIS

Chicago
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	17,937	602	1,097	1,645	1,645	2,145	1,638	598	798	598	294	1,400	1,301	1,486	1,486	602	602
½ – 1	39,348	955	1,460	3,215	2,541	1,871	2,662	3,259	1,371	1,171	1,466	4,172	1,411	4,764	5,176	2,133	1,701
1 – 3	132,512	16,499	-	-	-	-	4,184	7,806	4,331	3,859	2,936	4,139	22,684	17,295	5,916	22,125	20,738
3 – 5	312,409	23,528	-	-	-	-	-	-	3,609	5,871	26,209	28,864	34,985	63,293	38,057	30,789	57,204
TOTAL	502,206	41,584	2,577	4,860	4,186	4,016	8,484	11,663	10,109	11,499	30,905	38,575	60,381	86,838	50,635	55,649	80,245

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

ILLINOIS

Lemont
A.E. Staley Manufacturing Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	647	64	65	65	-	65	-	65	-	65	65	65	-	64	-	64	-
½ – 1	647	64	65	65	65	65	65	65	65	64	64	-	-	-	-	-	-
1 – 3	13,514	-	-	517	517	518	517	517	-	-	-	1,092	2,186	2,186	2,186	2,186	1,092
3 – 5	23,953	3,814	5,084	3,814	1,034	1,034	518	-	-	-	2,596	3,463	2,596	-	-	-	-
TOTAL	38,761	3,942	5,214	4,461	1,616	1,682	1,100	647	65	129	2,725	4,620	4,782	2,250	2,186	2,250	1,092

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

ILLINOIS

Meredosia
National Starch & Chemical Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	34	8	3	-	1	1	1	3	6	2	1	1	1	1	1	1	3
½ – 1	134	32	12	2	4	4	5	13	23	12	5	2	2	2	3	2	11
1 – 3	1,057	248	96	14	28	32	40	103	182	91	43	19	19	19	22	16	85
3 – 5	1,829	429	166	25	49	55	71	177	315	159	72	33	32	33	38	27	148
TOTAL	3,054	717	277	41	82	92	117	296	526	264	121	55	54	55	64	46	247

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

ILLINOIS

Ringwood
Morton Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	2,299	90	90	182	181	181	-	101	302	302	302	-	116	156	116	90	90
1 – 3	11,985	362	362	724	723	723	1,208	1,812	1,812	1,208	465	466	466	465	465	362	362
3 – 5	13,609	981	981	981	904	1,357	1,357	904	1,510	1,510	233	233	232	233	233	980	980
TOTAL	27,893	1,433	1,433	1,887	1,808	2,261	2,565	2,817	3,624	3,020	1,000	699	814	854	814	1,432	1,432

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

INDIANA

Covington
Olin Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	49	1	-	15	15	1	2	2	3	1	1	1	1	1	1	3	1
½ – 1	196	5	-	58	58	4	6	8	11	5	5	5	5	5	4	12	5
1 – 3	1,538	38	-	457	457	34	51	63	87	41	41	41	41	27	28	94	38
3 – 5	2,662	65	-	790	791	59	88	110	151	72	71	72	71	47	48	162	65
TOTAL	4,445	109	-	1,320	1,321	98	147	183	252	119	118	119	118	80	81	271	109

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

IOWA

Cedar Rapids
Cryovac Division

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	2,766	224	186	186	369	186	-	107	159	160	107	-	-	224	298	299	261
½ – 1	5,270	464	697	696	464	107	107	107	107	211	107	107	107	483	565	565	376
1 – 3	40,651	8,001	5,417	7,208	3,823	714	1,013	1,012	1,012	1,280	1,279	266	266	417	301	3,315	5,327
3 – 5	56,854	2,625	15,070	16,908	5,727	2,704	114	114	114	229	228	114	114	114	3,498	4,934	4,247
TOTAL	105,541	11,314	21,370	24,998	10,383	3,711	1,234	1,340	1,392	1,880	1,721	487	487	1,238	4,662	9,113	10,211

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

IOWA

Centerville
Union Carbide Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	91	15	-	-	-	1	-	2	3	2	2	2	1	2	16	23	22
½ – 1	364	59	-	-	-	8	-	8	11	7	8	8	4	7	64	92	88
1 – 3	2,866	462	4	2	-	66	-	60	85	60	65	65	35	51	503	720	688
3 – 5	4,962	800	5	4	-	112	-	103	147	103	114	114	59	89	872	1,247	1,193
TOTAL	8,283	1,336	9	6	-	187	-	173	246	172	189	189	99	149	1,455	2,082	1,991

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

IOWA

Clinton
DuPont Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	370	153	153	1	-	4	4	11	1	1	1	-	38	-	1	1	1
½ – 1	1,480	611	611	4	1	14	14	44	3	4	4	1	153	1	4	6	5
1 – 3	11,641	4,805	4,805	28	9	115	114	344	27	32	32	8	1,201	8	31	44	38
3 – 5	20,153	8,319	8,318	48	15	198	198	596	46	56	56	14	2,078	15	56	76	65
TOTAL	33,644	13,888	13,887	81	25	331	330	995	77	93	93	23	3,470	24	91	127	109

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

IOWA

Davenport
Oscar Mayer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	3,258	449	183	175	164	175	-	176	175	175	-	261	128	304	86	358	449
½ – 1	9,283	731	1,482	1,732	1,244	492	-	-	-	-	-	428	642	542	428	731	731
1 – 3	94,020	7,905	9,164	11,354	8,865	312	9,148	8,159	11,052	6,390	-	606	5,325	1,122	1,344	6,495	6,779
3 – 5	67,608	5,127	2,512	-	13,090	9,461	18,084	9,188	4,443	-	-	539	718	539	1,808	1,808	291
TOTAL	174,16[illegible]	14,212	13,341	13,261	23,363	10,440	27,232	17,523	15,670	6,565	-	1,834	6,813	2,607	3,666	9,392	8,250

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

KANSAS

Tecumseh
DuPont Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	12	1	2	2	2	2	2	1	-	-	-	-	-	-	-	-	-
½ – 1	560	4	8	9	10	9	7	54	153	153	153	-	-	-	-	-	-
1 – 3	3,771	32	63	73	76	73	52	224	611	612	612	-	134	403	403	403	-
3 – 5	29,656	55	109	126	131	126	91	36	255	2,039	255	1,168	5,741	9,710	7,774	2,040	-
TOTAL	33,999	92	182	210	219	210	152	315	1,019	2,804	1,020	1,168	5,875	10,113	8,177	2,443	-

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

KENTUCKY

Owensboro
Dewey & Almy Chemical Division

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	216	6	6	6	6	12	6	11	12	11	-	-	26	88	26	-	-
½ – 1	866	24	24	24	24	48	24	42	48	42	-	-	102	362	102	-	-
1 – 3	6,808	189	189	189	189	377	189	332	380	332	-	-	805	2,832	805	-	-
3 – 5	11,787	327	327	326	327	654	326	576	657	576	-	-	1,393	4,905	1,393	-	-
TOTAL	19,677	546	546	545	546	1,091	545	961	1,097	961	-	-	2,326	8,187	2,326	-	-

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

LOUISIANA

Lake Charles
PPG Industries, Inc.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	51	5	5	-	-	-	-	-	-	5	5	6	5	5	5	5	5
½ – 1	51	5	5	-	-	6	6	5	-	-	5	5	5	-	5	-	5
1 – 3	9,712	-	2,545	2,544	15	-	-	16	16	-	16	15	15	465	1,815	1,800	450
3 – 5	45,227	408	817	1,762	3,988	11,147	14,056	3,713	3,050	1,026	31	20	31	3,111	2,067	-	-
TOTAL	55,041	418	3,372	4,306	4,003	11,152	14,062	3,734	3,066	1,031	57	46	56	3,581	3,892	1,805	460

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

LOUISIANA

Plaquemine
Dow Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	240	27	28	25	1	3	1	22	14	82	5	12	5	9	-	-	6
½ – 1	960	107	114	100	4	13	4	87	57	324	22	46	21	35	-	-	26
1 – 3	7,548	845	894	789	33	99	33	687	447	2,549	170	364	164	273	-	-	201
3 – 5	13,068	1,463	1,549	1,365	58	172	58	1,189	773	4,413	293	629	285	474	-	-	347
TOTAL	21,816	2,442	2,585	2,279	96	287	96	1,985	1,291	7,368	490	1,051	475	791	-	-	580

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

MARYLAND

Odenton
Amtech, Inc.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	856	38	39	39	38	38	39	39	-	141	188	141	-	-	39	39	38
½ – 1	1,925	52	51	51	51	51	52	52	282	423	423	282	-	-	51	52	52
1 – 3	7,409	1,384	1,703	733	205	205	149	658	564	565	564	564	-	-	39	38	38
3 – 5	33,792	1,403	1,924	4,645	-	-	827	1,104	966	278	278	3,340	3,341	3,882	4,701	4,433	2,670
TOTAL	43,982	2,877	3,717	5,468	294	294	1,067	1,853	1,812	1,407	1,453	4,327	3,341	3,882	4,830	4,562	2,798

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

MICHIGAN

Midland
Dow Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	444	89	-	4	6	6	4	2	2	2	3	3	2	14	77	115	115
½ – 1	1,775	363	-	15	23	23	15	6	6	8	12	12	8	55	307	461	461
1 – 3	13,960	2,853	-	119	178	178	119	47	47	63	95	95	63	436	2,417	3,625	3,625
3 – 5	24,168	4,940	-	206	308	308	206	81	82	110	164	164	110	755	4,183	6,276	6,275
TOTAL	40,347	8,245	-	344	515	515	344	136	137	183	274	274	183	1,260	6,984	10,477	10,476

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1978.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

NORTH CAROLINA

Pisgah Forest
Olin Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	72	2	3	3	5	3	2	5	6	9	9	6	6	6	3	2	2
½ – 1	287	8	11	13	20	11	7	20	25	35	34	25	25	25	12	8	8
1 – 3	2,256	60	88	102	162	88	60	157	194	272	272	195	195	194	97	60	60
3 – 5	3,905	103	152	177	280	152	104	272	337	471	471	337	337	337	169	103	103
TOTAL	6,520	173	254	295	467	254	173	454	562	787	786	563	563	562	281	173	173

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

OHIO

Avon Lake
B.F. Goodrich Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	1,267	-	331	440	331	-	17	16	17	-	17	16	16	17	16	17	16
½ – 1	2,618	441	441	440	441	441	42	41	41	41	42	41	42	-	41	41	42
1 – 3	8,602	441	441	440	2,174	1,597	25	25	25	24	25	25	676	2,609	25	25	25
3 – 5	20,000	-	-	-	1,214	1,214	1,674	1,068	1,807	1,818	1,882	692	4,531	4,010	-	-	-
TOTAL	32,487	882	1,213	1,320	4,160	3,252	1,758	1,150	1,890	1,883	1,966	774	5,265	6,636	82	83	83

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

OHIO

Circleville
DuPont Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	305	31	30	31	-	31	-	30	-	30	-	31	-	30	-	30	31
½ – 1	305	31	30	31	-	31	-	30	-	30	-	31	-	30	-	30	31
1 – 3	914	92	91	91	-	92	-	91	-	91	-	92	-	91	-	91	92
3 – 5	8,704	6,691	1,099	-	91	183	183	183	183	91	-	-	-	-	-	-	-
TOTAL	10,228	6,845	1,250	153	91	337	183	334	183	242	-	154	-	151	-	151	154

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

OHIO

Cleveland
American Can Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	4,064	337	445	112	112	112	180	360	361	361	361	180	114	227	452	114	226
½ – 1	15,004	321	1,385	2,149	3,442	2,593	270	541	541	541	541	270	265	529	1,068	265	293
1 – 3	207,033	19,812	20,171	11,992	7,661	5,184	13,936	11,110	10,714	18,484	8,175	2,629	4,843	17,161	13,063	21,403	20,705
3 – 5	216,840	1,562	8,451	18,095	19,869	17,193	2,393	-	12,652	11,858	21,758	4,583	17,052	23,419	33,791	24,164	-
TOTAL	442,931	22,032	30,452	32,348	31,084	25,062	16,779	12,011	24,268	31,244	30,835	7,662	22,274	41,336	48,354	45,946	21,224

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

PENNSYLVANIA

Bristol
Rohm & Haas Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	2,624	1,132	721	-	47	70	70	47	-	-	107	108	108	107	107	-	-
½ – 1	8,018	2,879	3,364	-	140	141	140	141	140	-	-	-	322	429	322	-	-
1 – 3	49,351	4,948	5,550	1,308	1,013	1,013	1,377	1,655	3,148	4,638	3,683	3,036	1,878	4,518	4,032	4,682	2,872
3 – 5	79,000	30,168	12,297	2,512	5,196	794	595	1,143	286	-	-	-	3,454	1,799	2,400	2,707	15,649
TOTAL	138,993	39,127	21,932	3,820	6,396	2,018	2,182	2,986	3,574	4,638	3,790	3,144	5,762	6,853	6,861	7,389	18,521

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

PENNSYLVANIA

Marcus Hook
FMC Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	1,379	-	-	-	140	187	140	91	182	183	183	182	91	-	-	-	-
½ – 1	10,213	187	2,247	2,247	1,848	374	186	152	304	304	304	304	152	481	482	481	160
1 – 3	58,872	3,223	4,916	19,444	11,823	-	-	-	-	61	61	4,045	4,362	2,579	3,155	2,920	2,283
3 – 5	80,022	1,574	13,937	18,193	10,021	368	368	368	368	368	-	-	17,691	8,005	1,627	917	6,217
TOTAL	150,486	4,984	21,100	39,884	23,832	929	694	611	854	916	548	4,531	22,296	11,065	5,264	4,318	8,660

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

PENNSYLVANIA

Philadelphia
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	2,125	711	-	-	-	-	-	-	-	211	211	281	-	-	-	-	711
1 – 3	264,361	60,430	1,045	12,314	6,366	16,758	9,179	2,932	5,346	176	2,040	2,040	176	3,129	7,427	66,780	68,223
3 – 5	360,636	46,020	14,716	28,727	22,692	25,969	18,221	11,784	-	15,162	8,264	2,754	-	6,660	35,103	63,179	61,385
TOTAL	627,122	107,161	15,761	41,041	29,058	42,727	27,400	14,716	5,346	15,549	10,515	5,075	176	9,789	42,530	129,959	130,319

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

SOUTH CAROLINA

Simpsonville
Cryovac Division

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
½ – 1	767	77	76	77	-	77	-	77	-	77	-	76	76	77	-	-	77
1 – 3	3,070	-	-	307	307	307	307	307	307	307	307	307	307	-	-	-	-
3 – 5	9,354	-	-	-	307	614	307	-	-	307	614	614	307	1,885	2,514	1,885	-
TOTAL	13,191	77	76	384	614	998	614	384	307	691	921	997	690	1,962	2,514	1,885	77

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1978.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TENNESSEE

Goodlettsville
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	617	-	-	-	-	-	62	62	62	62	121	62	62	62	62	-	-
½ – 1	1,850	-	-	-	-	-	185	185	185	185	185	185	185	185	185	185	-
1 – 3	11,116	99	197	198	197	197	99	3,954	3,954	741	740	740	-	-	-	-	-
3 – 5	11,715	296	296	296	296	149	148	-	-	4,808	1,023	489	979	979	978	489	489
TOTAL	25,298	395	493	494	493	346	494	4,201	4,201	5,796	2,069	1,476	1,226	1,226	1,225	674	489

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TENNESSEE

Kingsport
Eastman Chemical Products, Inc.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	665	44	41	22	18	15	11	7	34	25	22	11	8	15	104	140	148
½ – 1	2,660	174	165	86	73	60	45	27	136	102	88	42	32	59	419	560	592
1 – 3	20,922	1,370	1,301	679	572	468	351	209	1,071	799	690	330	248	468	3,291	4,404	4,671
3 – 5	36,220	2,373	2,251	1,175	991	810	609	362	1,854	1,384	1,195	572	429	810	5,698	7,624	8,083
TOTAL	60,467	3,961	3,758	1,962	1,654	1,353	1,016	605	3,095	2,310	1,995	955	717	1,352	9,512	12,728	13,494

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TENNESSEE

Knoxville
Rohm & Haas, Inc.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	4,029	416	416	207	-	266	399	400	266	-	124	124	124	124	331	416	416
½ – 1	11,238	416	1,738	1,736	2,125	2,125	114	114	114	-	186	280	279	484	398	713	416
1 – 3	64,969	6,384	6,636	9,702	6,367	4,450	4,148	4,536	3,080	784	1,859	4,093	4,291	1,083	928	2,798	3,830
3 – 5	67,387	5,048	7,285	6,398	5,814	5,403	5,217	5,317	6	7	6	4,612	2,478	2,610	5,250	5,562	6,374
TOTAL	147,623	12,264	16,075	18,043	14,306	12,244	9,878	10,367	3,466	791	2,175	9,109	7,172	4,301	6,907	9,489	11,036

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TEXAS

Iowa Park
Cryovac Division

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	1,159	-	-	-	232	348	347	232	-	-	-	-	-	-	-	-	-
½ – 1	1,159	116	116	116	116	116	116	116	116	115	-	-	-	-	-	-	116
1 – 3	3,644	17	17	16	-	1,043	1,392	1,043	-	-	16	17	16	17	17	16	17
3 – 5	166	17	17	16	-	-	-	-	16	17	-	16	-	17	16	17	17
TOTAL	6,128	150	150	148	348	1,507	1,855	1,391	132	132	16	33	16	34	33	33	150

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TEXAS

Freeport
Dow Chemical Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	24	2	2	3	2	3	-	2	-	3	-	2	-	2	-	3	-
½ – 1	24	2	2	2	2	2	2	2	2	3	-	-	-	-	-	2	3
1 – 3	96	19	19	19	-	-	-	-	-	-	-	-	-	-	-	19	20
3 – 5	11,935	-	-	-	-	-	-	-	-	1,476	1,476	2,216	1,476	738	911	2,731	911
TOTAL	12,079	23	23	24	4	5	2	4	2	1,482	1,476	2,218	1,476	740	911	2,755	934

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

TEXAS

Sherman
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	5	1	-	1	-	1	-	-	-	1	-	-	-	1	-	-	-
½ – 1	14	-	1	2	1	-	1	-	2	-	1	2	1	-	2	-	1
1 – 3	3,059	1,213	-	-	-	-	-	-	6	8	8	6	-	-	-	606	1,212
3 – 5	18,779	7,094	4,355	3,437	-	-	-	-	-	-	-	-	-	-	-	-	3,893
TOTAL	21,857	8,308	4,356	3,440	1	1	1	-	8	9	9	8	1	1	2	606	5,106

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

VIRGINIA

Fredericksburg
FMC Corp.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	295	6	6	19	15	15	15	-	6	8	8	7	49	65	53	5	18
½ – 1	1,181	26	26	75	60	60	60	-	23	34	34	26	196	259	212	21	69
1 – 3	9,289	202	202	589	468	468	468	-	178	267	267	212	1,545	2,033	1,668	169	553
3 – 5	16,081	349	349	1,019	811	811	811	-	308	463	463	367	2,673	3,520	2,888	292	957
TOTAL	26,846	583	583	1,702	1,354	1,354	1,354	-	515	772	772	612	4,463	5,877	4,821	487	1,597

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

VIRGINIA

Richmond
DuPont Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	856	86	86	85	86	85	86	85	-	-	-	-	-	-	85	86	86
½ – 1	1,998	200	200	200	199	200	200	199	-	-	-	-	-	-	200	200	200
1 – 3	14,371	717	359	-	-	-	-	5,146	-	-	743	2,230	2,229	2,230	-	-	717
3 – 5	11,553	4,281	-	-	-	-	-	-	-	-	-	-	-	-	-	3,449	3,823
TOTAL	28,778	5,284	645	285	285	285	286	5,430	-	-	743	2,230	2,229	2,230	285	3,735	4,826

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

POPULATION RESIDING WITHIN VARIOUS DIRECTIONS OF PLANTS PRODUCING VINYLIDENE CHLORIDE*

WISCONSIN

Madison
Oscar Meyer & Co.

DISTANCE FROM PLANT (in miles)	DIRECTION FROM PLANT																
	TOTAL	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
0 – ½	3,553	499	-	-	-	-	-	189	189	378	378	378	189	188	167	499	499
½ – 1	8,028	726	61	61	61	60	629	630	630	630	630	250	374	374	250	1,331	1,331
1 – 3	46,442	2,314	564	766	946	2,827	3,164	9,013	3,217	4,987	7,667	83	250	-	1,200	4,256	5,188
3 – 5	73,482	808	662	247	371	371	3,853	4,939	12,586	1,519	18,290	24,720	3,769	-	-	539	808
TOTAL	131,505	4,347	1,287	1,074	1,378	3,258	7,646	14,771	16,622	7,514	26,965	25,431	4,582	562	1,617	6,625	7,826

*Population figures are based on 1970 SMSA Census Tract Reports. The location and number of plants producing or processing vinylidene chloride in August 1976.

Appendix IX. Population in Tracted Areas

Town and State	Total	Distance from Plant(Miles) 0–1/2	1/2–1	1–3	3–5
Vernon, CA	499,330	53	209	149,329	349,739
Pace, FL	4,949			2,121	2,828
Chicago, IL	502,206	17,937	39,348	132,512	312,409
Lemont, IL	38,761	647	647	13,514	23,953
Ringwood, IL	27,893		2,299	11,985	13,609
Cedar Rapids, IA	105,541	2,766	5,270	40,651	56,854
Davenport, IA	174,169	3,258	9,283	94,020	67,608
Tecumseh, KS	33,999	12	560	3,771	29,656
Lake Charles, LA	55,041	51	51	9,712	45,227
Odenton, MD	43,982	856	1,925	7,409	33,792
Avon Lake, OH	32,487	1,267	2,618	8,602	20,000
Circleville, OH	10,228	305	305	914	8,704
Cleveland, OH	442,931	4,054	15,004	207,033	216,840
Bristol, PA	138,993	2,624	8,018	49,351	79,000
Marcus Hook, PA	150,486	1,379	10,213	58,872	80,022
Philadelphia, PA	627,122		2,125	264,361	360,636
Simpsonville, SC	13,191		767	3,070	9,354
Goodlettsville, TN	25,298	617	1,850	11,116	11,715
Knoxville, TN	147,623	4,029	11,238	64,969	67,387
Freeport, TX	12,079	24	24	96	11,935
Iowa Park, TX	6,128	1,159	1,159	3,644	166
Sherman, TX	21,857	5	14	3,059	18,779
Richmond, VA	28,778	856	1,998	14,371	11,553
Madison, WI	131,505	3,553	8,028	46,442	73,482
TOTAL	3,274,577	45,452	122,953	1,200,924	1,905,248

Appendix X. Population in Untracted Areas

Town and State	Total	(Distance from Plant(Miles)			
		0–1/2	1/2–1	1–3	3–5
Decatur, AL	38,418	423	1,690	13,293	23,012
Cheswold, DE	23,647	260	1,040	8,182	14,165
Dalton, GA	11,654	128	513	4,032	6,981
Meredosia, IL	3,054	34	134	1,057	1,829
Covington, IN	4,445	49	196	1,538	2,662
Centerville, IA	8,283	91	364	2,866	4,962
Clinton, IA	33,644	370	1,480	11,641	20,153
Owensboro, KY	19,677	216	866	6,808	11,787
Plaquemine, LA	21,816	240	960	7,548	13,068
Midland, MI	40,347	444	1,775	13,960	24,168
Pisgah Forest, NC	6,520	72	287	2,256	3,905
Kingsport, TN	60,467	665	2,661	20,922	36,219
Fredericksburg, VA	26,846	295	1,181	9,289	16,081
TOTAL	298,818	3,287	13,147	103,392	178,992

Appendix XI. Population by State

Location	Population	Company
Alabama		
Decatur	38,418	Minnesota Mining & Manuf. Co. Monsanto Co.
California		
Vernon	499,330	Oscar Meyer & Co.
Delaware		
Cheswold	23,647	Reichhold Polymers, Inc.
Florida		
Pace	4,949	American Cyanimid Co.
Georgia		
Dalton	11,654	Dow Chemical Co.
Illinois		
Chicago	502,206	Oscar Meyer & Co.
Lemont	38,761	A.E. Staley Manuf. Co.
Meredosia	3,054	National Starch & Chemical Corp.
Ringwood	27,893	Morton Chemical Co.
Indiana		
Covington	4,445	Olin Corp.
Iowa		
Cedar Rapids	105,541	Cryovac Division
Centerville	8,283	Union Carbide Corp.
Clinton	33,644	DuPont Co.
Davenport	174,169	Oscar Meyer & Co.
Kansas		
Tecumseh	33,999	DuPont Co.
Kentucky		
Owensboro	19,677	Dewey & Almy Chemical Div.
Louisiana		
Lake Charles	55,041	PPG Industries, Inc.
Plaquemine	21,816	Dow Chemical Co.
Maryland		
Odenton	43,982	Amtech, Inc.
Michigan		
Midland	40,347	Dow Chemical Co.

North Carolina		
Pisgah Forest	6,520	Olin Corp.
Ohio		
Avon Lake	32,487	B.F. Goodrich Chemical Co.
Circleville	10,228	DuPont Co.
Cleveland	442,931	American Can Co.
Pennsylvania		
Bristol	138,993	Rohm & Haas, Inc.
Marcus Hook	150,486	FMC Corp.
Philadelphia	627,122	Oscar Meyer & Co.
South Carolina		
Simpsonville	13,191	Cryovac Division
Tennessee		
Goodlettsville	25,298	Oscar Meyer & Co.
Kingsport	60,467	Eastman Chemical Products, Inc.
Knoxville	147,623	Rohm & Haas, Inc.
Texas		
Iowa Park	6,128	Cryovac Division
Freeport	12,079	Dow Chemical
Sherman	21,857	Oscar Meyer & Co.
Virginia		
Fredericksburg	26,846	FMC Corp.
Richmond	28,778	DuPont Co.
Wisconsin		
Madison	131,505	Oscar Meyer & Co.
TOTAL	3,573,395	

Appendix XII. Population by Company

Company	Population	Location
American Can Co.	442,931	Cleveland, OH
American Cyanimid Co.	4,949	Pace, FL
Amtech, Inc.	43,982	Odenton, MD
Cryovac Division	105,541	Cedar Rapids, IA
	13,191	Simpsonville, SC
	6,128	Iowa Park, TX
Dewey & Almy Chemical Div.	19,677	Owensboro, KY
Dow Chemical Co.	11,654	Dalton, GA
	21,816	Plaquemine, LA
	40,347	Midland, MI
	12,079	Freeport, TX
DuPont Co.	33,644	Clinton, IA
	33,999	Tecumseh, KS
	10,228	Circleville, OH
	28,778	Richmond, VA
Eastman Chemical Products, Inc.	60,467	Kingsport, TN
FMC Corp.	150,486	Marcus Hook, PA
	26,846	Fredericksburg, VA
B.F. Goodrich Chemical Co.	32,487	Avon Lake, OH
Minnesota Mining and Manufacturing Co.	38,418	Decatur, AL
Monsanto Co.		Decatur, AL
Morton Chemical Co.	27,893	Ringwood, IL
National Starch and Chemical Corp.	3,054	Meredosia, IL
Olin Corp.	4,445	Covington, IN
	6,520	Pisgah Forest, NC

Oscar Meyer & Co.	499,330	Vernon, CA
	502,206	Chicago, IL
	174,169	Davenport, IA
	627,122	Philadelphia, PA
	25,298	Goodlettsville, TN
	21,857	Sherman, TX
	131,505	Madison, WI
PPG Industries, Inc.	55,041	Lake Charles, LA
Reichhold Ploymers, Inc.	23,647	Cheswold, DE
Rohm & Haas, Inc..	138,993	Bristol, PA
	147,623	Knoxville, TN
A.E. Staley Manuf. Co.	38,761	Lemont, IL
Union Carbide Corp.	8,283	Centerville, IA
TOTAL	3,573,395	

Appendix XIII. Cumulative Population by Plant

Population	Percent	Cumulative Population	Cumulative Percent	Location
627,122	17.5	627,122	17.5	Philadelphia, PA
502,206	14.0	1,129,328	31.5	Chicago, IL
499,330	14.0	1,628,658	45.5	Vernon, CA
442,931	12.4	2,071,589	57.9	Cleveland, OH
174,169	4.9	2,245,758	62.8	Davenport, IA
150,486	4.2	2,396,244	67.0	Marcus Hook, PA
147,623	4.1	2,543,867	71.1	Knoxville, TN
138,993	3.9	2,682,860	75.0	Bristol, TN
131,505	3.7	2,814,365	78.7	Madison, WI
105,541	3.0	2,919,906	81.7	Cedar Rapids, IA
60,467	1.7	2,980,373	83.4	Kingsport, TN
55,041	1.5	3,035,414	84.9	Lake Charles, LA
43,982	1.2	3,079,396	86.1	Odenton, MD
40,347	1.1	3,119,743	87.2	Midland, MI
38,761	1.1	3,158,504	88.3	Lemont, IL
38,418	1.1	3,196,922	89.4	Decatur, AL
33,999	1.0	3,230,921	90.4	Tecumseh, KS
33,644	.9	3,264,565	91.3	Clinton, IA
32,487	.9	3,297,052	92.2	Avon Lake, OH
28,778	.8	3,325,830	93.0	Richmond, VA
27,893	.8	3,353,723	93.8	Ringwood, IL
26,846	.8	3,380,569	94.6	Fredricksburg, VA
25,298	.7	3,405,867	95.3	Goodlettsville, TN
23,647	.7	3,429,514	96.0	Cheswold, DE
21,857	.6	3,451,371	96.6	Sherman, TX
21,816	.6	3,473,187	97.2	Plaquemine, LA
19,677	.6	3,492,864	97.8	Owensboro, KY
13,191	.4	3,506,055	98.2	Simpsonville, SC
12,079	.3	3,518,134	98.5	Freeport, TX
11,654	.3	3,529,788	98.8	Dalton, GA
10,228	.3	3,540,016	99.1	Circleville, OH
8,283	.2	3,548,299	99.3	Centerville, IA
6,520	.2	3,554,819	99.5	Pisgah Forest, NC
6,128	.2	3,560,947	99.7	Iowa Park, TX
4,949	.1	3,565,896	99.8	Pace, FL
4,445	.1	3,570,341	99.9	Covington, IN
3,054	.1	3,573,395	100.0	Meredosia, IL